Greetings:

A student who attended the final exam review on Sunday took notes and has generously offered to share them with the rest of the class. I have pasted them below for your reference.

Good luck to all on the Exam Wednesday.

-- Zach

· Earth's atmospheric layers, know them from the ground up.

· Troposphere holds 90% of the air we breath.

· Know Basic Green House Effects:
  · Gases have a tendency to trap heat and include Co2, water vapor, methane, chlorofluorocarbons, nitrous oxides, and ozone.

· Of 100 units of sunlight, how many reach the earth's surface? 70

· The atmosphere redistributes heat with the help of the ocean. How does the ocean monitor earth's temperature? The ocean conveyor belt warms air and without it there could be global cooling. What air currents contribute to redistribution? Doldrums, trade winds, and jet stream.

· Anything else contribute to global cooling? Aerosols

· The rotation of the planet, and the speed at which it moves impacts climate. At the poles it moves at 0mph whereas in Boston 1,000mph.

· Know about temperature inversion- cold air on top of hot air. What can this do? Trap pollutants in a localized atmosphere.

· Chlorofluorocarbons, CFC's:
  · Used in spray cans, contributes to 15-30% of greenhouse effect, particles accumulate in atmospheric window and each absorb huge amounts of infrared radiation emitted from earth, they have a high residence time, eat ozone, and allow more UV light on earth.
Two ozone holes are in Australia and Bangor, Maine

"Look over the atmospheric readout from the lecture"

Snow reflects more of the heat out therefore in the ice age heat did not stay.

Be able to identify and graph the cooling-heating pattern of a city:
(this has to do with primary and secondary pollutants and their concentrations in respect to rush hour)

Be able to name secondary pollutants like: ozone

What is brown haze and how does it relate to NO2?

Nitrogen Dioxide (NO2) Major source is cars, where else does it come from? What are it's harms?

Sulfur Dioxide (SO2): Coal burning power plants produce most of it-in US 51% (mercury is a pollutant in this industry along with other trace metals), it accumulates and travels long distances, oxidizes into smaller SO4 particles that are more harmful, contributes as a precursor to acid rain

The Midwest has high smoke stacks that allow high winds to carry pollutants east to us.

Hot soak emissions- are emitted by cars that have been turned off but are still warm and burning fuel.

Difference between mobile and still sources: Buildings and factories are still sources, it is only boats, cars, and other vehicles that are mobile sources.

What physiological effect does carbon monoxide have on the body? It is 100x more easily bonded to hemoglobin than oxygen- blocks oxygen.

Functions of different parts of the respiratory system: including cilia, aveoli, etc.

Why is asbestos so harmful: It's size and shape makes it indigestible by Marophages.

What is epidemiology? The statistical study of diseases.

Acid Rain: sulfuric acid, carbonic acid, sulfur dioxide and others. PH of rainfalls normally should be over 5.5. Rain PH under 4.5 is considered acidic. SO2 (oxidizes) reacts with oxygen to form SO3... which leads to acid rain.

Atmosphere is 78% nitrogen, 21% oxygen, and .03% Carbon Dioxide:
there are 360 parts per million of CO2 in the atmosphere.

Carbon Dioxide is responsible for 50% of the global warming.

Know what black body radiation is:
"A black body is a theoretical object that absorbs 100% of the radiation that hits it. Therefore it reflects no radiation and appears perfectly black. In practice no material has been found to absorb all incoming radiation, but carbon in its graphite form absorbs all but about 3%- leads to its strong contribution to global warming."
Where do hydrocarbons come from?

What is the air to fuel efficiency for a "lean burning car"? 15:1

Clean Air Act was amended in 1990's

What are some strategies for new power plants to adopt for cleanliness? Wet stacks, scrubbers that use water to knock down particles, and "bag houses" that act as vacuums.

Cars can use catalytic converters and fuel injection technology to curb emissions.

What are the National Ambient Air Quality Standards (NAAQS) exist for six pollutants?

POP's are what? Persistent Organic Pollutants like DDT, polychlorinated biphenols, 100 have been identified, there are laws against the "dirty dozen".

Where do POP's store (collect) in the body? Fat.

What are PCB's? polychlorinated biphenols are a group of synthetic organic chemicals that can cause a number of different harmful effects.

Who started the EPA and when? Nixon in the 70's.

What percentage of global Carbon emissions does the US contribute? 25-30%

1 degree C temperature change has occurred in the past 100 years.

By 2050 a 5 degree temperature change may be upon us.

*Know how particle size relates to what gets into the lungs. What is blocked by the nose? What is the importance of particle size?

At the Rio Summit Meeting in 92 the Framework Agreement on Climate Change was accepted.

Hydrocarbons come from: car emissions and unburnt fuels.

**GOOD LUCK EVERYONE***

***NOW IT IS TIME TO GO "SAVE THE WORLD"***
ENVR E-101 Environmental Management 1
Harvard University
Instructors: John D. Spengler, PhD & George D. Buckley

Classes meet at Harvard Wednesdays 7:35pm-9:30pm
Harvard Hall 104 – Harvard Yard
Streaming Media Presentation online 2-3 days later

Course Web Site:
http://courses.dce.harvard.edu/~environment/

Web Site Questions: webmaster@sciencenetwork.com

Technical Support: dce-distance-ed@harvard.edu

Newsletter Editor: nscie126news@sciencenetwork.com

For subscribe/unsusbscribe instructions, see:
http://lab.dce.harvard.edu/extension/environment/ListServer.html

Current edition and all back issues of Course Newsletter are available online:
http://lab.dce.harvard.edu/extension/environment/!!News-pics/newsletter-fram eset.html

[NOTE: Environmental Management uses the List Server designated 'NSCIE126' for both Fall and Spring term classes. This Newsletter was prepared for students of Environmental Management I, ENVR E-101, CRN 11925.]