



Getting a Handle on Greenhouse Gases



Your Family's Impact on the Greenhouse Effect

Materials Needed:

- __A calculator
- __Your family
- __Gasoline receipts or gasoline credit card bill
- __Household utility bills (electric and natural gas)
- __Household receipts for propane or other fuels



Background:

The burning of fossil fuels such as gasoline, coal, oil, natural gas, and wood usually produces CO_2 . However, some electric utility companies utilize electricity from non-fossil fuel sources of energy such as nuclear, solar, hydroelectric, and wind. Because of this, your determinations in this experiment are only estimates of CO_2 production. You can determine how much CO_2 your family releases into the atmosphere by calculating the amount of gasoline your family buys and the amount of fossil fuel your family uses to heat or cool your house.

Problem:

The burning of fossil fuels releases CO_2 into the atmosphere.

Hypothesis:

By using utility and gasoline receipts, an estimation of CO_2 production can be calculated.

Procedure:

To determine how much energy your family used in one month:

1. Look at the gasoline credit card bill or gasoline receipts to find out how many gallons of gas were bought. If your family uses propane gas, you can use that receipt to estimate how many gallons of propane are used in a month. Record this figure.
2. Check the utility bill to find out how many "kilowatt hours" (kph) your family used. If you have a natural gas bill, find out how many "therms" you used last month. (Kilowatt hours and therms are the units your utility company uses to measure your energy use).
3. Use this chart to estimate the amount of CO_2 released.

Electricity _____ (kwh) X 1.8 = _____ lbs. of CO₂.

Natural gas _____ (therms) X 12 = _____ lbs. of CO₂.

Gasoline _____ (gallons) X 19 = _____ lbs. of CO₂.

Propane _____ (gallons) X 12 = _____ lbs. of CO₂.

Total per month = _____ lbs. of CO₂



Work with your family to try to conserve energy for one month. There are many efforts your family can make to reduce energy consumption including:



Turning off lights when leaving the room.

Turning down the temperature of the hot water heater.

Buying a water heater “blanket.”

Turning off the TV when no one is watching it.

Only using the washing machine or dishwasher when they are full.

Using the dryer less, using a clothes line more.

Replacing light bulbs with lower wattage bulbs (try 75 watts instead of 100).



Mention to your family that for every gallon of gas a car burns, 18 - 20 pounds of CO₂ are put into the atmosphere! The average car pumps its own weight (3,500 lbs.) Of CO₂ into the atmosphere every year.

Suggest to your family to try a “No Car Day” once a week to see if you can figure out other ways of getting to school and work. Perhaps members of your family can carpool with co-workers or school mates or take the bus once a week. Are you close enough to your destination to ride a bike or walk? After one month of these activities to reduce energy use, recalculate your gas and utility bills.

Conclusions:

Do your conclusions support or reject your hypothesis?

Follow-up:

Perhaps understanding the money saved would encourage your family to reduce their use of fossil fuels. Is there a way to determine how much money was saved when your family reduced their utility and gasoline bills (if there was a reduction)?

How can your family reduce (or continue to reduce) the amount of CO₂ released into the air?

Do you think different societies contribute different amounts of CO₂ into the air?