

Chapter 3 Questions and Key terms
Chemistry 102 – Basic Principles of Chemistry

Instructor: Dr. Joseph Provost

Suggested Chapter Questions: 2,7,15,16,17,20,23,33,34,39,40,58 In the book
1,3,10-12,14-20 From Quiz I on the web
6-8,11,12,14,16,19,20 From Quiz II on the web

Key Terms:

| | | |
|-----------------------|--------------------|--------------------------------------|
| Greenhouse gas/effect | Global Warming | Forcings |
| Medieval Warm Period | Little Ice Age | Sawtooth Curve of CO ₂ |
| IR Absorption | Carbon Cycle | CO ₂ Sinks (Sequestering) |
| Methane | Polar Ice Cap Loss | IPCC |
| Kyoto Protocol | | |

Key Learning Objectives – By the end of the chapter you should be able to

- ✓ Know what a greenhouse gas is and relate the gasses to global warming.
- ✓ Understand the role the Earth's atmosphere plays in maintaining temperature
- ✓ Know what IR radiation is and how it contributes to global warming
- ✓ Understand how an IR spectrum works
- ✓ Describe the way we know about global warming – both historic levels and modern levels of carbon dioxide.
- ✓ Be able explain what carbon dioxide and methane do to global warming.
- ✓ Detail where each of the key greenhouse gasses come from and relate their relative danger
- ✓ Relate the warming and cooling cycles in history including the medieval warming period and little ice age.
- ✓ Know what the important parts of the carbon cycle are
- ✓ Understand how photosynthesis is an important part of the carbon cycle
- ✓ Explain why there is a saw-tooth pattern in the carbon dioxide levels.
- ✓ Be able to explain how IR absorption is involved in global warming. In particular be able to answer questions about vibrations of a molecular and IR.
- ✓ Know the manner in which carbon dioxide gasses are currently being reduced.
- ✓ Explain the concept of carbon sequestering.
- ✓ Describe how polar ice cap and mountain top glacier decrease relates to global warming and the alternative explanation involving the little ice age.
- ✓ Know what the role of the Intergovernmental Panel on Climate Change has on understanding the impact of global climate change.
- ✓ Describe the basic principles of the Kyoto Protocol AND why the US has not yet signed.

Provost's Bottom Line: Most of this chapter focuses on describing what is happening to global warming. It is important that you look at the chapter questions and especially the web quizzes to see the kind of questions I might ask. It is critical to answer the how not just the what of this information. Know what and where the greenhouse gasses come from and how, historically the levels are critical in understanding what is happening now. I will ask a question or two on the IR spectrum and the shape of the greenhouse gasses. Don't skip that section. Also don't forget to look at the information on the Kyoto Protocol and the effects of global warming on hurricanes.