Greenhouse Gases & Climate Change

Greenhouse Gases and Climate Change: 1 day

Â Â Â Â Â Â Â Â Â Â Â Instructor:
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Download Course Syllabus

Background:

This course was first developed in early 2008 and is continually updated.Â Ten presentations during the first year were primarily to government personnel - sponsored by CenSARA, LADCO and NESCAUM.

Course Objectives:

This course is intended as an introduction and overview of human caused climate change and associated effects.Â The courseÂ includes copies of the graphics used for the presentation and a summary text book with references to help students pursue further research and understanding.Â Most of the course focuses on the science of climate change - things we know with confidence versus areas of uncertainty.Â Some aspects - temperature increases and a rising ocean level - were predicted many years ago although the magnitudes and time scales are still uncertain.Â Other things such as the change in ocean chemistry, the speed of some changes, and the response of natural systems that amplify the effects of human greenhouse gas (GHG) emissions are relatively recent discoveries.

Target Audience:

Climate change will effect everyone and related regulation will effect people who work in most fields of environmental or energy management. Although the course was written for air regulatory staff, who normally have a significant science background, people with limited science training can follow the main points and most of the details.Â

Course Topics:

Â Â Â Â Â Â Â Â Â Â Â (1)
The greenhouse effect and overview of climate change

Â Â Â Â Â Â Â Â Â Â Â (2)
Human generated greenhouse gases (GHG)

Â Â Â Â Â Â Â Â Â Â Â (3)
Options for controlling greenhouse gas emissions

Â Â Â Â Â Â Â Â Â Â Â (4)
Climate changes - past, present, projected

Â Â Â Â Â Â Â Â Â Â Â (5)
Government and private initiatives to track and reduce GHG emissions

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Perspective:

Within the next 15 years humans will have increased atmospheric GHG levels by more than 50% from levels that have prevailed for at least a million years.Â Substantial further increases are virtually certain.Â The increases in atmospheric CO2 and methane will drive changes in the climate and biology of the planet that will inexorably follow the laws of nature (physics, chemistry, biology, etc).Â Will the resulting climate mirror that of the warmer, ice free earth that existed long ago?Â How will plant and animal species respond?Â Science is gradually filling in a picture of our future planet.Â But the future scenario depends on both the GHG already emitted and on the amounts of GHG we emit in coming decades - future emissions depend on the action, or inaction, of governments and society as a whole.Â We live at a pivotal time when the collective actions of three or four generations of humans will establish the climactic character of the earth for thousands of future generations.Â Since the emerging planet may have a substantially diminished ability to support human populations, we should all be concerned.