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Should Society Wait for Hard Scientific Evidence?

Overall there is little hard scientific evidence that anthropogenic activity, either advertently or inadvertently, is causing significant changes in weather and climate, particularly on the global scale. This is certainly true with respect to cloud seeding where there are only a few limited examples of where cloud seeding has been scientifically shown to be effective in enhancing rainfall. Nonetheless, there are many nations which are currently running operational cloud seeding projects. Apparently, the decision has been made in those nations and states that the benefits outweigh the risks of applying the scientifically unproven technology of weather modification by cloud seeding. The major risks, however, are limited to the possibility of creating severe weather or floods, and to increasing rainfall in one local region at the expense of rainfall in a neighboring local region. Often the decision to apply cloud seeding technology in a particular country or state is a prescription of a *political placebo* or a decision that it is better to do something than to sit idly by and do nothing as reservoirs dry up and crops wither and die due to the absence of water.

Again, the situation is not much different with respect to human impacts on global climate. We lack hard scientific evidence that anthropogenic activity is causing, or will cause, changes in global climate. Nonetheless, there is convincing evidence that CO₂ concentrations are increasing at an alarming rate. Clearly, reductions in CO₂ emissions in many of the industrialized countries will have a significant impact on global CO₂ emissions and reduce the chance that human activity will have a significant impact on weather and climate. Certainly there is evidence that the more developed nations are at least causing a leveling off of CO₂ emissions.

But what are the costs? Some of the costs are in terms of reduced industrial productivity which impacts employment and the general standard of living. Another cost is associated with the impacts of using alternate energy resources. One could decide to convert to "cleaner" nuclear power rather than fossil fuels as has been done in France. In this case one is trading off the potential impacts of CO₂ emissions on global warming against the long-term problem of disposing of nuclear waste as well as the dangers of inadvertent releases of nuclear materials. Is this a wise tradeoff? Without solid scientific evidence that CO₂ emissions are causing significant changes in climate, one cannot make an objective evaluation of the relative cost of each alternative.

An alarming trend is found in India (Marland, 1991) where a sharp rise in CO₂ emissions in India is occurring, while per capita emissions remain steady. This shows a clear impact of increased population on CO₂ emissions and suggests that one of the most important steps in reducing those emissions is getting the world population stabilized.

One does not need strong scientific evidence that human activity is causing global warming to recognize a reduction in the population on earth will have long-term benefits; common sense is all that is needed!

Indeed, population growth is a problem which is much more severe than any of the scenarios proposed to occur as a result of greenhouse gas warming. Catastrophic social upheavals are likely to result as the human density continues to increase. Bryson (1989) presents evidence that even today India is at their absolute water limit, such that below average rainfall can cause massive deaths.

