

Global Warming and Fossil Fuels

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Commentary

Present wide-spread concern about global warming and the contribution of the burning of fossil fuels thereto is generally overblown to the point of unjustified hysteria. While we are in a phase of global warming, this is simply part of an eternal pattern of cyclical temperature flux in which the world repeatedly cools off and warms up. We just happen now to be a warm up phase.

There is no doubt that the burning of fossil fuels contributes to this warming process, but they contribute only a 6%, which is minimal. To put this in context, if we could reduce fossil fuels emissions by 18% (i.e., $1/6^{\text{th}}$)—which is an unlikely possibility but one within the range of imagination— we would reduce the rate of global warming by 1%. To put this in another way: it is not worth it.

In addition, long-range projections of global warming usually fail to factor in the reality that we are running out of fossil fuels. Economically viable oil will be exhausted in 20 to 25 years. Coal and natural gas as finite resources eventually will follow. Thus, within the lifetimes of the younger readers of these lines, we will need other—presumably clean—sources of energy to fill out our energy needs. Similar shifts in primary sources of energy have occurred in the past: We went from human muscle power, to animal muscle power, to wind and water, to burning wood, then coal, then oil [1-3].

Now we must move beyond petroleum to probably a number of other sources which will complement coal, as long as it lasts. Solar pops to mind, where and when it can be harnessed. Nuclear energy comes in two forms, both with down sides. Nuclear fission is the technology currently employed throughout the world, but on top of the danger of meltdowns, the plants are productive for only about 50 years and then have to be abandoned. We are currently facing the shutting-down of the first fission power plants and wringing our hands in dismay as we do so. Nuclear fusion has the up-side of breeding its own fuel, so offers the attractive potential of permanently solving

all our energy problems for all time except for one minor detail. It produces plutonium 238 by the ton.

Why is this a problem? Because PU238 is one of the most toxic materials known. An experiment on its toxicity involved placing small amounts in the respiratory tracts of dogs to see how little would induce cancer. It turns out, 1/3 of a nanogram (ng) will do so, although it takes some seven years for the cancer to develop. The working assumption was that a smaller amount would also be lethal, but the incubation time would be longer than the life span of the dogs. Storing PU238 would be something of a problem, as it has a half-life of 25,000 years [4,5].

Other sources—like geothermal, wind and tidal—would be of minimal help in providing the energy needed. The technology for combining oxygen and hydrogen to produce water and electricity would entail large amounts of hydrogen, which, as all fans of the *Hindenburg* know, is highly flammable. Lithium batteries have an annoying habit of catching fire, so we may be hard pressed to find clean alternative sources of energy to replace oil, when that is depleted.

Meanwhile, global warming will continue apace more despite rather than because of what we do.

References

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