Part I
The Science of Global Warming And Needless Death and Illness
Introduction

Air pollution is a thoroughly inadequate term for describing materials that we have no choice but to breathe, which then cripple and kill and now pose a threat to the very survival of life as we know it. Saying that some of these are "pollutants" that damage health while others are "greenhouse gases" that cause global warming is not only misleading, but incorrect. All of them–at least all those that I know of–directly or indirectly both cause illnesses and death and change the climate.

The purpose of this document is to explain in an understandable way just what air pollutants are, how they wreak havoc with human and other life and, finally, how to eliminate them. *Saving Ourselves* is organized in multiple Parts, each with several chapters. The first part deals with the science of air pollution, the second with technological and other solutions. The remaining parts are more political in nature, and found elsewhere.

Unlike most other explanations of global warming, this starts somewhat in mid-stream with a discussion of "tipping points," which are catastrophic, abrupt and usually violent, irreversible changes, such as lightening strikes, avalanches and the collapse of the Twin Towers on Sep. 11, 2001. These pose far and away the greatest threat to survival, and it is apparent that change has already begun with some of them.

PLEASE HEED THIS WARNING

A warning: although the world seems to have finally awakened to the reality of global warming, it is now starting down a path that will condemn us to failure. There are two sorts of pollutants that cause global warming: those that are short lived, with atmospheric lifetimes of a few minutes to a few years; and, those that are long-lived, with lifetimes of 50 to 50,000 years. Spurred by corporations seeking to enrich themselves by solving a threat that they themselves created, and some well meaning governments and people, the world is limiting its efforts to only the long-lived pollutants, especially carbon dioxide. While this is essential, curbing emissions of carbon dioxide, produced principally when coal, oil, gasoline and other fossil fuels are burned, will provide only extremely limited cooling benefits during our lifetimes. In the words of a recently published study–

> *a significant fraction of the fossil fuel CO2, ranging in published models in the literature from 20–60%, remains airborne for a thousand years or longer.1*

In addition, corporations want to use "emissions trading," in which air pollution is shopped around like so many shares of stock or head of cattle. There has never been an emissions trading program that worked, and for those who consider it a good idea to rely on the "market" for solutions, consider the $700 billion bailout of the financial industry in 2008, the collapse of Enron, the savings and loan and junk bond crises of the 1980s, the massive electricity shortfalls in California in the 1990s and, of course, the Great Depression.

1. Source: Archer, D. & Brovkin, V. The millennial atmospheric lifetime of anthropogenic CO2. *Climatic Change,* V. 90, No. 3, Oct., 2008, pp. 283-297.

Scientists and physicians have their own jargon, which eases communication among themselves, but raises a barrier for ordinary people. Several years ago, my late colleague, Dr. David V. Bates, and I were offered the opportunity to produce and distribute a newsletter to demystify the field of air pollution and its effects. The first part of this document contains much of the information we collected and distributed, rewritten and synthesized for optimal understanding. It is written even more clearly and simply than the original Newsletters, but still accurately, hopefully making it a valuable document for teachers, students, concerned citizens and others.

However, even if this document succeeds at demystifying what air pollution is and what it does, there remains the question of whether it is possible to eliminate these poisons. The answer to that question is an unequivocal yes.

For more than three decades, much of my time and energy has been devoted to finding and evaluating technologies and practices throughout the world that can reduce air pollution, and even eliminate it altogether. There is no doubt whatsoever that air pollution could quickly be reduced to virtually zero with equipment that is now and has been for decades sitting on the shelves and in the warehouses of industry. Therefore, the second portion of this document is a review of the technologies and practices that could reduce air pollution.

Of course, some of these might increase the costs of transporting people and goods, the price of electricity, as well as other fuels and commodities. But money is merely one way of measuring value, and often it is the least important. Who among those reading this would not be willing to pay three to five times as much for electricity if it were made without emitting air pollution? Not that such a cost increase would, in fact, be required, for zero- or near-zero-polluting electricity–wind turbines, for example–and other goods can be made at or below the prices of current practices.

In truth, many of the technologies and practices in use today have remained fundamentally unchanged for a century or more. Today automobile engines are very sophisticated, but essentially the same as those that rolled off Henry Ford's assembly lines by the millions. Similarly, today's electricity generating plants, while much larger and more efficient, are make kilowatts much the same way that Thomas Edison's Pearl Street station did a century ago. Cleaner, cheaper and better ways of transporting goods and people and making electricity exist, but sits on the shelves gathering dust.

Most humans would gladly pay more in terms of money if that would assure a safer future for themselves and their children. Not so, however, for corporations, and those who own and manage them. Corporations and their officers are, by law, required to value profits over all else, which sets them apart from humanity. Corporations neither cry nor laugh, suffer from hunger or thirst, nor do they love or hate. That their activities grievously injure humanity or even threaten its very survival is of little moment to them, their officers and owners.

In pursuit of profits, corporations have managed to wrest control of the future from humanity. Although many intuitively know this, the details of how it happened are hidden from

public view. Therefore, located elsewhere is an explanation of just what has happened to democracy in the United States in the past generation, as well as an examination of what this means for our future. That document, however, is more political in nature. Posting it at the website of the *Health & Clean Air Newsletter*, which is operated as a nonprofit, non-political entity would be inappropriate. Those materials can be found at _____.

Should funding become available in the future, the *Newsletter* may be revived or this document may be expanded, for it barely touches the surface of a vast quantity of information. I welcome suggestions and comments from readers, and hope this will useful to all who read it.