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Press Release

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Subject: Total 100% Climate Change Control Within 20 Years -- The Roadmap Ahead.

While carbon dioxide is causing climate change so is water vapor. The water vapor in automotive exhaust as well as the water vapor discharged from the cooling towers at coal and nuclear power plants. Let's begin the roadmap by discussing Nuclear Power Plants.

Our position is that they should be converted to operate on oil, gas, or coal as a starting point to bring a sudden halt to nuclear wastes proliferation. The converted power plant should then practice climate change control by two distinct methods:

1. Incorporate photobioreactors to prevent the release of the climate change gas called Carbon Dioxide (CO_2), otherwise called carbon sequestration. This technology also accommodates SOx and NOx emissions.

2. Incorporate absorption chillers to prevent the release of the climate change gas called water vapor. The USDOE says: "Since nuclear power plants do not emit the harmful gases that could cause climate change, expanded use of nuclear power helps meet national energy and environmental goals." *WaterSmart Environmental Inc.* says "A deliberate and blatant lie by the USDOE to promote nuclear power without regard for climate change."

The truth of the matter is that water vapor in great quantities is being discharged from Nuclear Power Plant Cooling Towers throughout the world. On earth, the most abundant greenhouse gases are, in order of relative abundance:

- **water vapor,**
- **carbon dioxide,**
- **methane,**
- **nitrous oxide,**

- ozone, and
- CFCs.

The most powerful greenhouse gases are:

- water vapor, which causes about 36–70% of the greenhouse effect on Earth. (Note clouds typically affect climate differently from other forms of atmospheric water.),
- carbon dioxide, which causes 9–26%,
- methane, which causes 4–9%, and
- ozone, which causes 3–7%.

Please refer to the ***WaterSmart Environmental, Inc.*** May 28, 2008 Press Release that addresses water vapor at http://watersmart.com/Press_Releases.html.

No discussion on climate change would be accurate unless both Global Warming and Global Dimming are understood. Global dimming, a new term to most, is the gradual reduction in the amount of global direct irradiance at the earth's surface that was observed for several decades after the start of systematic measurements in the 1950s. The effect varies by location, but worldwide it has been estimated to be of the order of a 4% reduction over the three decades from 1960–1990. However, since 1990, the trend has reversed.

It is thought to have been caused by an increase in particulates such as sulfate aerosols in the atmosphere due to human action. The switch from a "global dimming" trend to a "brightening" trend in 1990 happened just as global aerosol levels started to decline.

Global dimming has interfered with the hydrological cycle by reducing evaporation and may have reduced rainfall in some areas. Global dimming also creates a cooling effect that may have partially masked the effect of greenhouse gases on global warming.

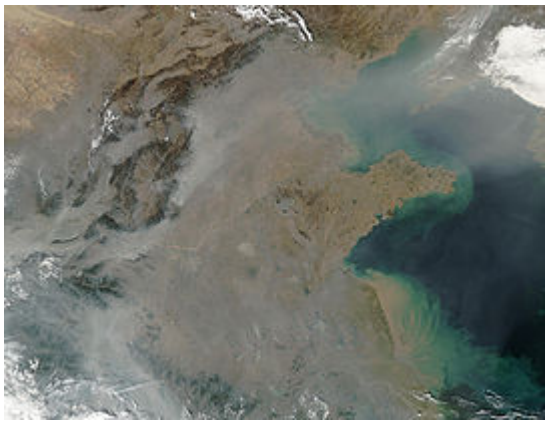
It is thought that global dimming was probably due to the increased presence of aerosol particles in the atmosphere caused by human action. Aerosols and other particulates absorb solar energy and reflect sunlight back into space. The pollutants can also become nuclei for cloud droplets. Water droplets in clouds coalesce around the particles. Increased pollution causes more particulates and thereby creates clouds consisting of a greater number of smaller droplets (that is, the same amount of water is spread over more droplets). The smaller droplets make clouds more reflective so that more incoming sunlight is reflected back into space and less reaches the earth's surface.

Clouds intercept both heat from the sun and heat radiated from the Earth. Their effects are complex and vary in time, location, and altitude. Usually during the daytime the interception of sunlight predominates, giving a cooling effect; however, at night the re-radiation of heat to the Earth slows the Earth's heat loss.

Smoke and haze are contributors to global dimming. Forest fires associated with deforestation are major contributors to global dimming because of their widespread use. China and the United States have many coal fires, some of which have been burning for decades causing immense emissions of carbon dioxide, haze, particulates, smoke, and other noxious gases. Unfortunately there is no easy fix to this problem. Quite fortunately, however, the *WaterSmart Environmental* roadmap to total 100% climate change control does not require a permanent fix for this particular problem since the technology is constantly achieving depletion of atmospheric carbon dioxide.

Coal Fires in China

The People's Republic of China (China) depends largely on coal to meet the country's energy demands. Even though China accounts for only 11 percent of the world's total recoverable coal reserves, it remains to be the world's largest producer, consumer and exporter of coal. Coal reserves of China are concentrated mainly in the northern part of the country. The coal mining belt stretches 5000 km from east to west and about 750 km in the north-south direction. Coal fires are spread in this entire belt. This map showing the distribution of coal fires in North China gives an idea of the extent of the problem of coal fires in China.



Coal Fires in Eastern China

In Eastern China there are dozens of fires burning on the surface (red dots) and a thick pall of smoke and haze (greyish pixels) filling the skies overhead. Photo taken by MODIS aboard NASA's Aqua satellite.

In the mid-1980s, Atsumu Ohmura, a geography researcher at the Swiss Federal Institute of Technology, found that solar radiation striking the Earth's surface had declined by more than 10% over the three previous decades. His findings are in apparent contradiction to global warming—the global temperature has steadily been going up. Less light reaching the earth would mean that it would have to cool. Ohmura published his findings "Secular variation of global radiation in Europe" in 1989. This was soon followed by others: Viivi Russak in 1990 "Trends of solar radiation, cloudiness and atmospheric transparency during recent decades in Estonia", and Beate Liepert in 1994 "Solar radiation in Germany — Observed trends and an assessment of their causes". Dimming has also been observed in sites all over the former Soviet Union. Gerry Stanhill who studied these declines worldwide in many papers.

Golden Gate Bridge with California's characteristic brown cloud in the background. Smog is a likely contributor to global dimming.

Independent research in Israel and the Netherlands in the late 1980s showed an apparent reduction in the amount of sunlight despite widespread evidence that the climate was actually becoming hotter. The rate of dimming varies around the world but is on average estimated at around 2–3% per decade. The trend reversed in the early 1990s. It is difficult to make a precise measurement, due to the difficulty in accurately calibrating the instruments used, and the problem of spatial coverage. Nonetheless, the effect is almost certainly present.

The effect (2–3%, as above) is due to changes within the Earth's atmosphere; the value of the solar radiation at the top of the atmosphere has not changed by more than a fraction of this amount.

The effect varies greatly over the planet, but estimates of the terrestrial surface average value are:

- 5.3% (9 W/m²); over 1958–85 (Stanhill and Moreshet, 1992)
- 2%/decade over 1964–93 (Gilgen *et al*, 1998)
- 2.7%/decade (total 20 W/m²); up to 2000 (Stanhill and Cohen, 2001)
- 4% over 1961–90 (Liepert 2002)

Note that these numbers are for the terrestrial surface and not really a global average. Whether dimming (or brightening) occurred over the ocean has been a bit of an unknown though a specific measurement (see below, Causes) measured effects some 400 miles (643.7 km) from India over the Indian Ocean towards the Maldives Islands. Regional effects probably dominate but are not strictly confined to the land area, and the effects will be driven by regional air circulation.

The largest reductions are found in the northern hemisphere mid-latitudes. The region of the spectrum of light radiation most affected seems to be the visible and infrared rather than the ultraviolet part of the spectrum.

Global Dimming can be controlled by:

1. Eliminating sulfate aerosols in the atmosphere due to human action. These aerosols are constantly being produced by industry, electrical power plants, airplanes, motor cycles, cars, trucks, trains, and ships since all commonly used fossil fuels contain sulfur. Sulfur is converted into sulfate during the combustion process. In the instance of a coal fired power plant, for example, the sulfur content of coal is converted into an aerosol sulfate that is otherwise known as “acid rain”. A roadmap to eliminate sulfate aerosols and global dimming consists of:

    A. Convert all power plants (oil, gas, and coal fired) such that their greenhouse gas emissions use carbon sequestration to capture their carbon dioxide, SOx, NOx, and sulfate aerosols. Carbon sequestration is achieved by using an enclosed photobioreactor to grow algae. The algae, in turn, are then converted into two biofuels, namely biodiesel and renewable methane gas. Renewable methane gas is produced whenever biowastes are treated using anaerobic digestion.

    B. Use both biodiesel and renewable methane gas as energy and biofuel sources to power industry, surface transportation equipment, and aircraft. Biodiesel and renewable methane gas do not contain any sulfur and consequently cannot form sulfate aerosols.

C. Eliminate smog as much as possible. Smog is the toxic hazy brownish yellow air that can be seen hanging over many cities. It forms when ground level ozone, toxic gases, and fine airborne particles mix with heat and sunlight. Chemicals that form smog include gas and diesel powered cars, trucks, buses, and lawnmowers, factories, industrial processes, oil-based paints, cleaners and other solvents, pesticides and herbicides, road paving, and other construction activities. Ground-level Ozone (O_3) is created when nitrogen oxide gases (NOx) react with volatile organic compounds (VOCs) on hot, sunny days.

D. Eliminate ground-level ozone (O_3) by reducing and possibly eliminating VOCs. A significant source of volatile organic compounds can be eliminated by switching from gasoline powered cars and power generators to biodiesel powered cars and generators. A measure of the volatility of fuels is characterized by its Reid Vapor Pressure. The Reid Vapor Pressure is measured at 100ºF and reported in pounds per square inch (PSI). The Reid Vapor Pressure for gasoline is around 7.5 PSI whereas for biodiesel it is around 0.2 PSI, about 3% that of gasoline. When replacing gasoline with biodiesel the SOx emissions disappear and the particulates (unburnt hydrocarbons) almost disappear. The NOx emissions, however, are slightly higher. The particulates and the NOx emissions can be made to entirely disappear by installing an air purification device to the engine that separates out the nitrogen component from combustion air such that the engine is fed with relatively pure oxygen—the other major component of air. Such devices are now being introduced to the marketplace. By applying this technology to biodiesel power equipment the NOx and particulates (unburnt hydrocarbons) entirely disappear since most of the precursors have also disappeared. The installation of the air separation device does require energy that diminishes car mileage. The slight loss of mileage will be more than offset by introducing biodiesel-electric cars that will get more than 100 miles per gallon. Biodiesel powered equipment has a zero carbon footprint. Please refer to the attached Press Release.

The carbon dioxide emissions from aircraft can be greatly reduced by operating exclusively on biodiesel that contains zero sulfur. Biodiesel is also characterized as having a zero carbon footprint. Ditto with surface transportation equipment that consists of motorcycles, cars, buses, and trucks.

The carbon dioxide emissions from diesel locomotives can be entirely eliminated by switching to self-biofueled locomotives per the attached Press Release. Ditto with ships per its attached Press Release.

The implementation of the above technologies throughout the entire world is expected to take no more than 20 years. With some study the roadmap is easy to understand and follow.

WaterSmart Environmental, Inc. **is marketing its Kyoto Protocol compliant wastes-to-energy technology on an economic development platform to concentrated animal feeding operators and to municipalities. Animal farmers benefit by purchasing biodiesel, electricity, and natural gas (methane) at a 20% discount from retail. Municipalities also benefit by making biodiesel, electricity, natural gas, and potable water available to its citizens and businesses at a 20% discount from existing prices. The technology is marketed on a build-own-operate basis thereby eliminating the necessity for local sales and property tax increases since project financing is entirely secured from the financial marketplace.**

Municipalities that embrace the waste-to-energy technology automatically become zero waste-to-landfill communities. The waste-to-renewable energy technology has been slowly developed over the last 10 years. It is just now being introduced to the international marketplace. The technology has the clear potential for making every single city throughout the world energy and fuels independent while reducing oil and natural gas imports. The technology will also permit every single city throughout the world to improve water and wastewater treatment infrastructure while creating jobs and investment opportunities. Widespread use of the technology carries with it the potential for contributing substantially to the reversing of global warming.

WaterSmart Environmental, Inc. **is a provider of waste-to-energy, food independence, water independence, and energy independence technologies and a manufacturer of highly engineered water purification components and systems. The company designs and builds a wide variety of water treatment equipment including packaged water and wastewater treatment plants, UltraPaq™ aerobic package plants, OAT™ Process anaerobic digesters with associated energy production, aerators, filters, PuriSep™ and SmartWater™ oil/water and solids/liquids separators, RainDrain™ perimeter trench sand filters for stormwater runoff, dissolved air flotation separators, air strippers, complete skid assembled aqueous waste treatment plants, FilterFresh™ skid mounted potable water production plants, skid mounted wastewater treatment systems for laundromats, commercial laundries, and car/truck wash facilities with water reclamation and reuse, softeners, demineralizers, activated carbon treatment equipment, and water purifiers for domestic and international markets.**

Worldwide Promoters of Renewable Energy, Organic Foods, Biofuels, & Water Independence Technologies by and for the Common Man