

Submission to the Senate Committee on Climate. Robert Stringer

The popular argument that carbon dioxide is a greenhouse gas and will cause global warming by absorbing radiation from the earth and re-radiating part of the absorbed radiation back to earth can be shot down in flames using formula from physics which have now been standing for over a hundred years.

Here are presented observations on gases and results obtained from the use of these well established formula.

## GASES

Mono atomic gases such as Argon, Neon Krypton, Xenon and Radon can not be heated directly by radiation unless it is of high enough energy to cause electron jumps and cause the gas to become a plasma.

When heated to temperatures up to 5000K or even to the temperature of molten lava all the kinetic energy is in the form of translational motion and this is directly proportional to the temperature.

Poly atomic gases such as carbon dioxide, methane etc not as plasma contain kinetic energy in two forms namely translational motion and vibrational motion within the molecule.

The vibration can take various forms such as bending and stretching at characteristic frequencies determined by atom masses and bond strengths.

It is the translational motion which determines the temperature but when such a gas is heated the kinetic energy is shared between the two modes by the recognised principle of equipartition of kinetic energy.

Thus it is that poly atomic gases have a higher specific heat than mono atomic gases.

When a poly atomic gas encounters a quanta of radiation at one of its natural frequencies of vibration the molecule is then caused to vibrate.

If this vibration kinetic energy is greater than the average kinetic energy of translational motion then part of the vibrational energy will be shared with translational motion. In other words part of the vibrational energy is converted into heat.

If this was not the case then the molecule would re-radiate at the same frequency with which it absorbs.

By analogy a violin string can be caused to vibrate at the natural frequency of it by intense enough sound of that frequency.

## OZONE

The normal oxygen in the atmosphere is in the form of a molecule two atoms of oxygen loosely bound together but it can also be in the form of three atoms bound together a stated named ozone with molecular weight 48gm/mole.

This molecule can also vibrate in various modes and is known to exist in the stratosphere where it absorbs the short wave ultra violet radiation from the sun.

If this radiation was absorbed and re-radiated then the radiation would reach the surface of the earth because it would be passed from molecule to molecule and not blocked as it is

known to be.

The reason for this is that the photon energy quanta is much greater than the average kinetic energy of the atmosphere gas so part of the vibration energy is instantly shared with the translational form leaving the vibrating ozone with vibrational energy too low to raise a quanta of radiation of that frequency to transmit.

### CARBON DIOXIDE

Currently in the atmosphere at about 380 parts per million or 0.038% molecular weight 44 Carbon dioxide never occurs in the condensed state in the atmosphere because the temperature is always far above the boiling point and the pressure is too low it therefore never has the power to reflect radiation.

Now it is well known that carbon dioxide makes the atmosphere opaque to radiation from the sun at wavelengths 14.9, 4.3 and 2.7 microns also partly opaque to radiation near 2 microns. As Tim Flannery puts it in his book "The Weather Makers" the atmosphere is as opaque as a brick wall to these frequencies. Therefore it follows that the atmosphere is equally opaque to these frequencies radiated from earth.

Since it is known that there is already full opacity both ways then to say that increased carbon dioxide will cause absorption of more radiation defies common sense. All it means is that the extinction will occur in a shorter distance of course this will heat a smaller amount of air which of course will be quickly mixed as before by convection

The reason for the opacity is that just as in the case of ozone the absorbed radiation producing vibration is converted partly into translational motion and not passed on from molecule to molecule by re-radiation by which process it would reach the earth surface.

Using established relationships from the kinetic theory of gases and the Max planck relationship for the energy of a photon to the frequency of it then it is simple to show that the photon energies for all wavelengths at which carbon dioxide vibrates will range from three to thirty times the average kinetic energy of translation for temperatures ranging from 223 $\text{K}$  to 323 $\text{K}$ .

This means that to comply with the known principle of equipartition of kinetic energy the carbon dioxide molecule will not be able to re-radiate because a large part of the kinetic energy of vibration is converted into kinetic energy of translation that is heat.

Anyone who disputes the relationship found between photon quanta energy and the average kinetic energy of translational energy of the atmosphere molecules for the frequencies concerned will need also to rewrite the physics text books.

My reference is the text book labelled "PHYSICS" by Robert Resnick and David Halliday 1968. The physical relationships for gases and radiation stated therein have now been established for over a hundred years.

The result of this finding is that increased carbon dioxide concentration in the atmosphere will not trap more radiation at the vibration frequencies as it already captures it all both coming in and going out. All that will happen is that the distance in the air required for full absorption will be shortened.

This will mean that a smaller quantity of air will be heated but it will just as before be carried aloft by convection. This has been repeated as politicians do to emphasise the point.

In any case the warming of the air near ground is by far more heated by contact with the ground than by trapped radiation. Just watch a hang glider pilot waiting for sunshine on a hillside to produce an updraft or a glider pilot seeking a ploughed field to obtain an updraft

Likewise turbidity in the ocean will decrease the distance for complete absorption of penetrating sunlight so that the same amount of radiation will be absorbed in less water and cause increased surface temperature.

While the so called greenhouse gases intercept a tiny range in the radiation spectrum aerosols solid or liquid intercept a very much greater range and either reflect at the same wavelength or absorb and re-radiate at longer and less energetic wavelength.

Later it is shown that re-radiation can occur at wavelengths much longer than those absorbed by carbon dioxide.

#### WATER.

Molecular weight 18gm/mole so is lighter than the average of air which is 29gm/mole and when water is evaporated at surface level it enhances the process of convection.

Water occurs in the atmosphere as gas between near zero and 4% as gas depending on the temperature and pressure as well as location. As gas it blocks incoming radiation from the sun over a wide range of wavelength up to 20 microns but as liquid over a much wider range up to 2000 microns or 0.2 cm and reflects even into the short wave radar wavelengths.

Water gas is transparent to the visible range but absorption bands overlap the carbon dioxide bands of 15 and 2.7 microns.

Water as condensed droplets not only absorbs and retransmits radiation but has the much more potent property of reflection and scattering. This is because the reflection is not confined to narrow vibrational bands but extends broadly from shorter than the visible wavelengths to the short wave radar wavelengths.

Water vapour (gas) can be in the atmosphere at temperatures below the dew point and still not condense if there are no other particles present. It can also exist in the liquid form below the freezing point till freezing is triggered by contact with a solid.

Calculations comparing photon energy with average kinetic energy of translation shows that at in the range of ambient atmospheric temperature found on earth about fifty degrees above and below 273 K or 0 C these energies can only be equal in the wavelength range of 40 to 60 microns depending on the temperature.

Where the vibrational and translational energies are equal there will be no net transfer of energy between them. This occurs for 40 micron radiation at near 340 K for the 45 micron radiation at near 330 K for 50 micron at 270 K for 55 micron at near 260 K and for 60 micron radiation at near 240 K

In this range liquid water can be active in absorption and re-radiation but it is well beyond the

range in which the other so called greenhouse gases can re-radiate.

Now it is well known that overnight cooling is greatly influenced by the atmospheric water content and that if there is enough water to give condensation to a light haze overnight cooling will be reduced by several degrees.

Depending on the amount of condensation the cooling overnight can range from zero to thirty degrees or more.

The effectiveness of reflection is demonstrated by the output from a one kilowatt solar panel which is oriented 43 degrees west of north so gets no direct sunlight before about 7am.

If there happens to be a cumulus cloud overhead at 6.30 am an output of 110 watts from the 17 square metre panel has been observed whereas if the sky is nearly clear the output is less than ten watts.

I was brought up on a sheep farm in Victoria but my father had a few milking cows. As a child between 8 and 13 years in the winter I would sometimes put out a tray of milk hoping to have it frozen in the morning. I soon learned that if the sky was hazy in the evening that there would be no frost next morning but if it was dark with bright stars then there was a good chance.

When I did get frozen milk there was always disappointment that it was thinner than the ice on the stock trough even if the milk was in the same location, This is now attributed to the turbidity of the milk.

When water freezes it excludes solutes but not particulate matter and as the ice grows at the interface between the ice and the water any particles in the water are included in the ice.

These particles then partly block the radiation from the water surface and so in a given period the depth of ice will be less than for clear water.

Thus it is that the depth of sea ice will be influenced by the water turbidity. The sources of turbidity are numerous and include sea life but currently are no doubt increased by industrial soot as for example that coming from China 24/365 and reaching to the west coast of USA.

At Yungaburra 17 degrees south in North Queensland on the 10<sup>th</sup> and 11<sup>th</sup> of July 2007 there were two light frosts. A row of tomato plants about 30cm tall were unaffected because they were partly shaded from the sky by a building.

On the evening of the 11<sup>th</sup> the sky was observed to be very clear with very bright stars so the tomatoes were covered with shade cloth. In the morning a temperature of minus 6°C was observed. The tomatoes survived except that two at each end of the shade cloth that could see a bit of sky had their tips burnt.

There was extensive damage to gardens all round and vines such as blue jade and flame of the forest were killed, in addition thousands of acres of lush green grass were quickly turned to brown. A farmer near Ravenshoe reported that one of his cows had frostbitten teats and a temperature of minus 15°C was reported in that area.

This result was because exceptionally dry air from the west where little rain had fallen for a long time came across to the east.

It is obvious that the current level of carbon dioxide with the alleged greenhouse properties did

nothing to avert this damaging fall in temperature.

Now it is conjecture that particulate matter in the atmosphere could induce condensation in the atmosphere earlier during night cooling and thus reduce the cooling period and therefore lead to higher morning temperature.

One possible source of particles is the small amount of soot from jet aircraft flying at around 30,000 feet. Current air travel is said to be in the order of 50,000 flights per day.

Likewise particulate matter in the atmosphere could be providing a reflective layer near polar regions so deflecting more radiation downward in them.

A recent press release from CSIRO February 2009 is well worth examination the URL is

[2. http://www.csiro.au/news/Aerosols.html](http://www.csiro.au/news/Aerosols.html)

Here is an extract cut from a recent CSIRO article on global warming which sets out the argument that carbon dioxide, methane etc are causing it.

Quote content unaltered except for the fonts blue and red.

## “Greenhouse gases and climate change

### Measuring the climate: then and now

Today, scientists from many nations work together to run a sophisticated global network of weather stations, ocean buoys, tide gauges, satellites and atmospheric sampling stations that constantly measure and record weather, sea levels and greenhouse gas concentrations. Researchers also analyse older records such as ships' logs, weather reports tidal records, and archaeological evidence to build up a picture of the Earth's climate over hundreds of years. To look back beyond this, scientists analyse proxy temperature records such as the annual growth rings of trees and corals, and small fossils in lake sediments. For example, sediment cores can indicate how coastlines have shifted with changes in sea level. Bubbles of air trapped deep in polar ice can reveal temperatures and atmospheric concentrations of greenhouse gases up to 800,000 years ago.

> Figure 2: The observed increases in global average temperatures cannot be explained by natural factors alone.

Global average temperature  
models using only natural factors  
models using both natural  
and anthropogenic factors  
observations

1.0

0.5

0.0

1900 1950 2000

Year Temperature anomaly (° C)

Greenhouse gases (GHGs) are a natural part of the atmosphere, **trapping and re-radiating heat from the Earth's surface**. The natural greenhouse effect is crucial in maintaining a surface temperature that can support life.

The main greenhouse gases are water vapour, carbon dioxide (CO<sub>2</sub>), methane, nitrous oxide, halocarbons and tropospheric ozone. Greenhouse gas concentrations are often expressed as a carbon dioxide equivalent (CO<sub>2</sub>-e). Many other natural and human factors also affect the climate. Natural variability such as the El Niño cycle and variations in solar activity can affect the temperature, while large volcanic eruptions can lead to cooling. Changes in land-use can either reduce or increase the amount of heat absorbed by the Earth's surface. Airborne particles (aerosols) have a net cooling effect.

### Concentrations of GHGs in the atmosphere have increased since 1750 and now exceed pre-industrial levels

Since the Industrial Revolution, CO<sub>2</sub> concentrations have risen 37%, methane 150% and nitrous oxide 18%. The global increases in CO<sub>2</sub> concentration are due primarily to fossil fuel use and land-use change, while the increases in methane and nitrous oxide are primarily due to agriculture. The CO<sub>2</sub> concentration in 2008 of 383

parts per million (ppm) is much higher than the natural range of 172 to 300 ppm that existed over the last 800,000 years.

***There is greater than 90% likelihood that most of the global warming since the mid 20th century is due to increases in greenhouse gas emissions from human activities.***

End of quote

By contrast there is 100% certainty that carbon dioxide will not re-radiate at any ambient temperature found in the earth atmosphere.

The program by Martin Durkin “ The Great Global Warming Swindle” is therefore vindicated.

Addendum

The proposal is often made that power generation should be made using gas instead of coal as this will reduce the amount of carbon dioxide emitted.

While this is true the use of gas instead of coal will not influence future earth temperature but will merely cause a loss of energy by the fact that gas used at the point of consumption can provide up to ninety percent of its fuel value whereas if burnt to produce electricity the best that can be expected is around 40 percent efficiency.

Thus it is that while gas powered generation is great for peak load power because it can be brought on line very quickly it is quite absurd to use it for base load generation.

If there is really care for future generations then we will ensure that waste of the limited fossil fuel resources will be minimised. One politician however is known to have said in response to “We must consider posterity” “ What has posterity ever done for us”.