

The following is a technical submission made in response to the development of new 'Solid Fuel Regulations for Ireland'

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Achieving a 'clean air strategy' is an issue which has been addressed in the design and development of Human habitation systems for space stations, the Moon and Mars. The regeneration of all Human life support requirements from air, food, water, and the removal of chemical pollutants within a confined habitat has been driven by two fundamental principles

- (1) a full disclosure of all chemical constituents within the environment,
- (2) a full disclosure of the health impact these chemical constituents impose on Humans.

Based on this information fully integrated and functional regenerative system are achieved.

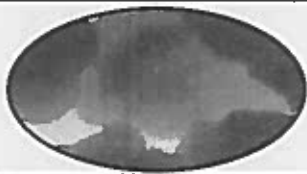


In contrast, the political decision to disconnect and address 'Climate Change' as an issue separate from 'Environmental change on Earth, has proved a disaster, and has raised three issues:

- (1) Other than a focus on carbon emissions, there is little attention to other, equally hazardous chemical pollutants in the surrounding environment, Figure.1, 6, & 7.
- (2) There is little attention to the impact these chemicals have on the human body, Figure 6 & 7.
- (3) There is little attention to the increase in chemical pollution as a consequence of implementing a 'Climate Action' such as the manufacture of wind and solar power, Figure 2.

Based on this background, the Government has the opportunity to show World leadership in developing a Fuel Regulation policy and 'Clean Air Strategy' in context to the more significant 'Clean Environment Strategy'.

Accordingly, and with respect to the Fuel Regulation Policy;

- (1) Solid fuels are assessed according to their entire pollution and human health impact
- (2) Solid fuels are compared to other 'Energy' and 'Energy Saving' systems on the same basis, allowing a more meaningful evaluation of domestic solid fuel use, in addition to reducing the concern of a 'Climate action / Clean technology' agenda being used to destroy a more environmental and economically effective domestic wood fuel industry, Figure 3, 4 & 5. and the use of Turf with relatively low impact.

Fuel / Energy / Energy saving Systems						
	Coal	Turf	Wood	Wind / Solar		Airtight / Insulation
Carbon Emissions	Yes	Yes	Neutral	No		No / Accumulate
Total Chemical Pollution	Yes	No	No	Yes		No / Accumulate
Negative Human Impact	Yes	Low	No	Yes		Yes

( Climate Action is only focus on Carbon emissions )

### Fuel Regulation Policy – Human Health impact:

The prevalence of childhood asthma has increased, with Ireland having one of the highest rates in the World despite a significant decrease in domestic solid fuel combustion and particulate matter ( $PM_{2.5}$   $PM_{10}$ ) emissions. Accordingly the scientific basis for a specific ban and regulation of solid fuel is problematic and weak, However the existence of a serious public health concern is not.

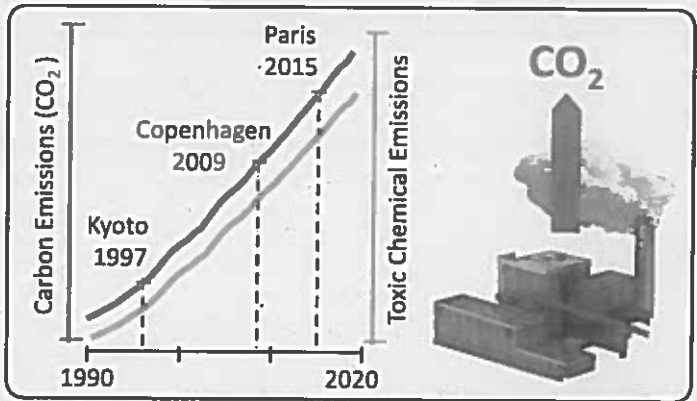
In addition to asthma, there has been a stark increase in childhood autism, attention deficit and hyperactivity disorders, brain cancer, and lymphocytic leukemia. All of these conditions can be associated with a range of toxic chemicals, grouped as 'elemental' such as lead and mercury, Figure-6 and modern complex chemicals, Figure-7. All of these chemicals can accumulate and be measured in the home environment, the Human body, and significantly in fetal cord blood, representing a risk to normal embryo development and increased susceptibility to conditions such as eczema, and asthma. Accordingly it is in the Public interest to ensure their pollution control strategy is fit for purpose and designed to address all chemical pollutants affecting Public and in particular infant health, and not hijacked to only address carbon based pollutants and the 'Climate Action' agenda. As stated in figure 9, The true value of a good Public Health / 'Clean Air' policy, is not measured by the level of particulate matter in the air, but the level of toxic chemicals in the cord blood of a new born child.

### Fuel Regulation Policy – Solutions:

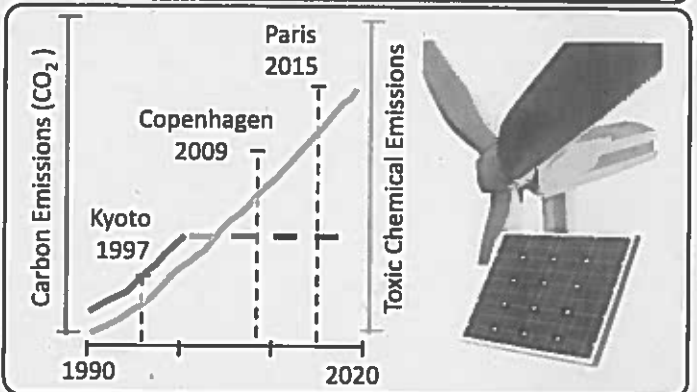
The release and off gassing of chemical pollutants may be unavoidable and more affectively dealt with by recovery, rather than any form of product (fuel) regulation or ban. Pollutants such as the Particulate Matter  $PM_{2.5}$  and  $PM_{10}$  from solid fuel combustion, can be captured by a range of technologies (constructed in Ireland) incorporated within domestic chimneys system. On a broader scale Ireland has an immense capacity to support bio-filtration systems on its filled peat bogs Figure 4.

Conversely a policy should also have the capacity to reassess and alter previous policy decision such as the impact of home based high insulation / air-tightness on public health, figure 8.

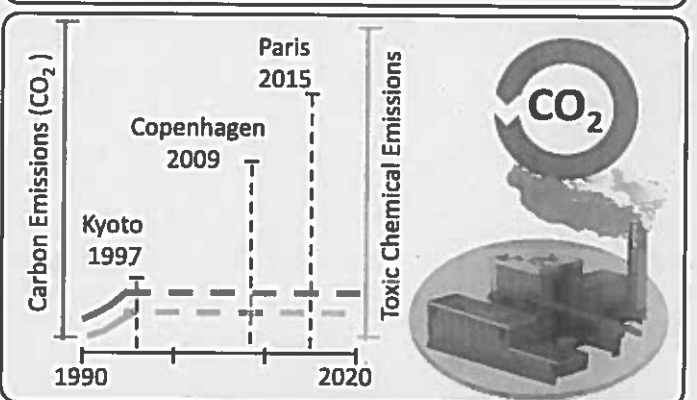
**Figure 1:** The extraction of coal, gas and oil has led to a significant release of carbon into the atmosphere (red line) surpassing all climate action agreements to date, however, it has also led to the release of an estimated 24 billion tonnes of toxic chemicals since 1850 (purple line), including cadmium, lead, mercury, thorium and uranium, contaminating our air food water, and the Human body ( figure 6 )



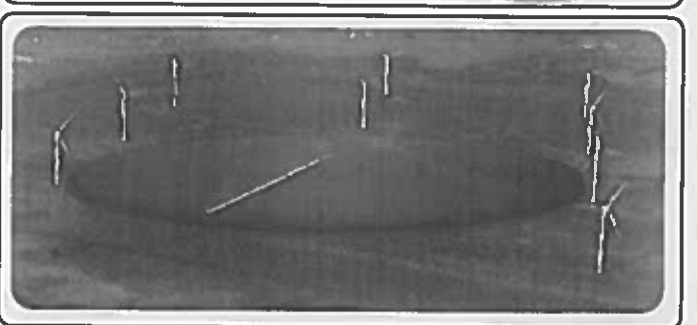
**Figure 2:** The quantity of wind turbines, solar panels and electric car batteries required to replace carbon emissions down to an atmospheric CO<sub>2</sub> level (red line) at 370 ppm (year 2000 level), would require further metal extraction and manufacture related toxic chemical pollution equivalent to that from the fossil fuel industry, (purple line), with significant impact on environmental and Human health.



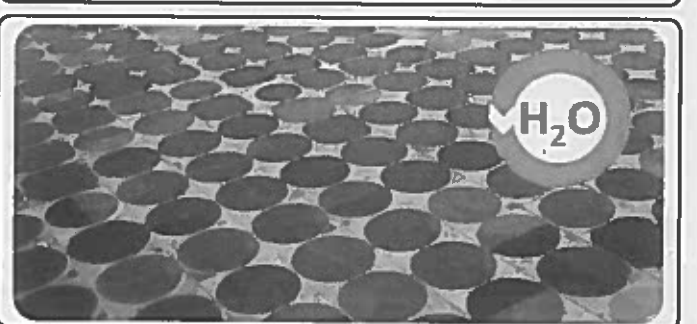
**Figure 3:** In contrast to the extensive extraction of geological resources (outlined in figure 1 and 2.), bio-energy systems are capable of recycling surface resources such as CO<sub>2</sub> into high density wood fuel, used in the generation of electricity , in addition to the recovery of a broad range of toxic chemicals, reversing the pollution trends of the last two hundred years.



**Figure 4:** Advances in the development of bio-energy Willow as a fully integrated system has achieved energy yields comparable to that of wind and solar power, at significantly lower cost, and based on local employment and economic benefit.



**Figure 5:** The ability to remove and recycle all chemical pollutants from urban waste water, on an industrial scale, while producing carbon neutral fuel, demonstrates the benefit and importance of addressing 'Climate' and 'Environmental' action in an integrated approach



**Figure 6:** A non contaminated healthy Human body is composed of 25 essential elements outlined in the periodic table (in Brown). The present day average Human elemental profile includes an additional array of pre-dominantly toxic chemicals (in purple) reflecting the chemicals extracted and contaminating the Earth's surface environment. Lethal levels of arsenic, lead and mercury have already been reached in many communities. To add to this problem with further extraction and pollution, in order to build the so called 'clean technologies' would seem perverse.

**Figure 7:** Modern society is also exposed to a broad array of man made complex chemicals including the eight classes of chemicals listed. These chemicals can be measured in the Human body, cord blood and milk, and are associated with a range of physical and mental health issues including cancer, obesity, respiratory (asthma) and neurological disorders. The failure to acknowledge these chemicals and focus only on solid fuel particulate matter such as  $PM_{2.5}$  and  $PM_{10}$  would undermine the value and ultimate success of a Public Health / 'Clean Air' policy.

- \* Poly Aromatic Hydrocarbons
- \* Poly Brominated Dibenzodioxins
- \* Per Fluorinated chemicals
- \* Poly Chlorinated Dibenzodioxins
- \* Organo Chlorine pesticides
- \* Poly Brominated Diphenyl Ethers
- \* Poly Chlorinated Naphthalenes
- Poly Chlorinated Biphenyls

**Figure 8:** A significant number of the chemicals listed in figure 6 and 7 accumulate in the home and in-door air environment. An increase in the air-tightness of a home has the risk of increasing the accumulation of these air borne pollutants and their negative impact on Human health, including asthma. It also highlights the need to distinguish between in-door and out door air quality, and the fact that we spend at least 70% of our time in an in-door environment. The failure to acknowledge these issues would again undermine the value and success of a Public Health/ 'Clean Air' policy.



**Figure 9:**

The true value of a good Public Health / 'Clean Air' policy, is not measured by the level of particulate matter in the air, but the level of toxic chemicals in the cord blood of a new born child.

