In addressing this Paper I would like to state it’s not something that can be toyed with, the Code has to be clear with an eye on the present and the future, not simply on how we access energy supply but more directly on how the people of this State will live, work and provide food as well as energy needs in the future.

To do this it’s necessary to achieve an environment where it’s safe to live and work, where the States natural environment is maintained to a high standard to ensure our fauna, flora, avian and human species can survive and thrive.

This document states …’proposed changes will be consulted on from October when the Code is released for consideration.’ and ...’key changes proposed are explored in this document.’ Yet the EPA is currently conducting a Major Review of environmental noise guidelines, which is due to conclude sometime in 2020 after NHMRC research and its findings are available. Surely it would be appropriate to wait for the EPA’s updating of their Guidelines before moving forward with discussion of Planning and Design Code changes?

The Executive Summary of the discussion paper uses terms such as ‘appropriate’ ‘amenity’ and ‘noise concerns’, each of which are important and require careful consideration, in context, with health issues a high level focus without placing interests of industry ahead of those of citizens of South Australia would have to live for many years with consequences of inappropriate changes.

LOCATION

Consideration should be made to where energy production takes place, whether it is possible to include more production where it’s needed and thereby reducing delivery costs.

Within the discussion paper the section ‘Turbines are getting taller’, has more to be considered than the factoring in of Aviation considerations and Visual Amenity.

- Maximum restriction on the Height and MW capacity of turbines
- Restriction of the number of turbines in any applied for project
- Restriction to the distance between projects
- Maximum number of turbines installed within a defined area/district

In urban areas there are such restrictions on building heights and industries are and have been restricted to prescribed areas to reduce/prevent annoyance and possibly danger to residents, yet these same considerations are not being offered to people living on rural properties.

This could be considered Government approved discrimination of what protection someone living in an urban area has and what protection is acceptable for those living in rural areas.

SETBACKS and NOISE

Recommended changes to setback distance and noise are considerably negligent in their ability to protect residents and the environment. The focus appears to be to appease requirements of the renewable energy industry.
Vesta is current largest turbines are around 5.6MW, blade sweep of 162 mts or 20,000m² with a standard sound noise level of 104dB(A)

The Golden Plains project in Victoria is to have around 200 5+MW GE turbines producing between 800 and 1000MW, 158m blade sweep

South Australia’s Development Planning needs to consider how to set controls on this industry to ensure the security of rural communities, not just supplying energy.

As with all man made machines Industrial Turbines emit noise.

- What type of noise, to what intensity and how it affects humans, as well as the natural environment is contentious?
- Therefore urgent consideration of Regulators to work not only with the industry but with independent acousticians and medical experts to re-write a Code to ensure the safety of both.
- A regulation for setbacks suitable to ensure the safety of neighbours, and those travelling through areas near projects is also urgently needed.

The setback distance proposed is created from a ‘pick from the hat’ rather than understanding the types of noise/sound/vibration being emitted and the ability of people and animals to physically cope with it.

Extensive independent research is being and has been undertaken with more people accepting machinery of this nature cannot and is not benign.

The current noise Standard was created many years ago with full co-operation of the industry therefore could be seen to have been designed out of self-interest.

- Setback distance should be relevant to the size of turbine being installed.
- Setback proposed from townships are inadequate to allow expansion of rural towns
- Government wishes to expand the population of rural towns
- Setback proposed for project neighbours who live in rural locations should be the same or greater than that for townships.
- Existing setbacks proposed are discriminatory. They assume people living on the edge of a township are more susceptible to the noise emitted than those living and working in rural areas.

Standards for Noise and Setback should not be created using the ‘pick from a hat’ method but should be based on independent acoustical and scientific research with a need to ensure the safety of human and animals living with environmental changes in a location adjacent to or near these Projects.

- Acceptance that over the past 20 years much has changed and adequate updating is required
- Equipment and methods of use to measure noise levels need to be updated to ensure the full range can be recorded.
- Claims that ‘background’ noise from tree’s bushes and other ‘barriers’ can ‘mask’ the noise from the multiple Industrial Turbines is no more than wishful thinking on the part of the industry.
- A machine that reaches into the air around 162m with a blade spinning at a regular speed and beat depending on the speed and direction of the wind cannot be compared to the rustling of trees and bushes.
• Nor can it be compared to noise from fencing tin rattling as it’s possible for someone to knock in some nails or remove a piece of rattling tin to stop annoyance but they cannot stop or remove an Industrial Wind Turbine.
• Setback distances should depend on the size, strength and number of turbines being installed.
• That they do not include noise from existing Industrial Turbines previously erected when undertaking noise assessment is a failure to adequately provide for the full spectrum and intensity of noise at a location being assessed. This omission ensures inadequate assessment for the safety of those living near these projects.
• A scale of setbacks should be developed with the assistance of independent scientific, medical and engineering experts taking into consideration the location, topography, number, height, capacity and noise emitted.

HUMAN HEALTH

Comments in the discussion paper relating to the NHMRC’s comment could be seen to indicate a desire to mislead readers. In fact the NHMRC did include in their Draft Review that ‘…there is consistent but poor quality evidence that proximity to wind farms is associated with annoyance and, less consistently, with sleep disturbance and poorer quality of life’.

They have since provided research funding for research using a methodology approved by them. This research is still not yet completed and changes to setbacks etc. should await the results.

Governments and Planning authorities responsible for Human health and the environment are required under the RIO Declaration on which the Paris Accord was created should remember principles of that Declaration including:

> Human beings are at the centre of concerns for sustainable development. They are entitled to a healthy and productive life in harmony with nature.

> In order to achieve sustainable development, environmental protection shall constitute an integral part of the development process and cannot be considered in isolation from it.

> In order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.(my emphasis)

Planning policy changes in 2012 followed public consultation but there was virtually no acknowledgement of their concerns but acceptance the industry above the rights of citizens to be ‘…entitled to a healthy and productive life in harmony with nature.’ were pandered to.

PROPOSED CHANGES?

Page 10 of the discussion paper, highlights changes being proposed in this current process will retain some of the draconian and dangerous aspects of the 2012 changes.

For instance, is it ‘appropriate’ to identify Wind Projects in farming, primary production and rural zones? Especially, when it’s stated it’s to provide ‘…certainty for renewable energy development in South Australia’. (my emphasis)
There has been a considerable investment in Renewable energy in South Australia and continuing to destroy our rural and regional environment simply to provide certainty to an established industry is not viable for the environment, human health or future of this State. Especially when Regulations are not based on scientific outcomes for the environment or human health, and have no upper limits set for size, capacity or even quantity of Turbines in total or in individual projects. Nor is there any consideration around the accumulated impact of so many turbines where one project abuts another, in many cases simply because of their desire to easily access the Grid.

Before more are approved it’s time for the Government to conduct a complete scientific examination of the environment, effects on human, flora, fauna and avian species in areas where turbines are currently operating, as well as the true worth and value and life span of this form of energy production.

With relation to ‘noise concerns’, there are more and more people reporting adverse health effects and or annoyance from the ‘noise’ emitted from these turbines. Reports are increasing not only in Australia but across the globe wherever these turbines are installed. Yet below are the proposed changes to apparently accommodate these concerns, but these changes again appear to be ‘pulled from a hat’ and have no relevance to the actual situation and concerns.

Page 11. Current system – 2km setback from townships and settlement zones and urban areas.

The proposal to increase the 2km setback by 10metres for each additional metre over 150 metres is not viable to protect people living on the edge of such places, neither does it allow for the expansion of these townships etc. If the Government wishes to encourage more people to live and work away from the main populated areas restricting the ability of such places to grow seems redundant.

Page 11. Current system – 1km setback from non-associated dwellings.

Setbacks from neighbouring homes of 1.2km! This is even less than for people living on the boundary of townships and settlement zones even before a 10mt additional setback, which is not applied for those living on a rural property.

Why are these people being discriminated against? They live in some of the quietest and most beautiful environments in our State, yet they are expected to now live with the intrusion of industrial machinery into their lives. This is not farming machinery which is used occasionally; it is not machinery that can be shut away in a shed out of site. Nor can it be shut down when people need rest or a quiet time to enjoy their environment. They lose control of their living environment and have less control than people living within a city or town where noise annoyance is regulated. Discrimination is apparent.


As discussed above the standard is out of date therefore the EPA needs to update the standard to one which correctly relates to today’s situation. The EPA needs the ability and funding to ensure effectively being able to update as required; they also
need staff trained in the area of assessing the acoustics effectively and the authority and equipment to properly undertake ‘spot’ checks at projects. These should consist of acoustic testing as well as testing for contamination around turbine bases to ensure there’s no unreported spillage. They also need to be informed as soon as a turbine has a mechanical problem or if something such as a blade is damaged or ‘thrown’ so they can attend, test and assess for contamination and ensure any clean-up is undertaken immediately.

Page 6. Information about the size of turbines increasing in height and capacity, unfortunately this information is fast becoming redundant as turbines are now being proposed at 250+ heights with a capacity of 6MW. Having a fixed maximum height and MW capacity would enable authorities to better assess projects to ensure citizens are not over run with projects as a result of unsuitable regulations.

If a turbine or other Renewable energy project plan was for a factory within a zoned industrial area it would be required to meet strict Regulations to ensure there is no adverse noise, or other disturbance to near residents. The Renewable industry in South Australia has none of these restrictions.

Projects are proposed to accommodate as many turbines as possible only restricted by accessible land. There’s no control on the number or size and capacity of turbines in a project. The only restriction is if the EPBC are consulted and they make changes to ‘mitigate’ in other words, allows them to cause some harm to the environment and the fauna, flora and avian species.

Human beings are irrelevant in both the Federal EPBC body and State Regulations and the EPA which appears to have little ability to move beyond Government Policy and operates under a reactionary model rather than a preventative one.

VISUAL AMENITY

Visual Amenity as a reason to object to or refuse projects was removed in the 2012 changes. Yet it appears to be included in these proposed changes.

However, as it’s not specifically detailed in the Discussion Paper it is difficult to know what is proposed.

Visual Amenity is important to our States environmental tourism as well as to the lives of those who live in our rural areas.

The view of Industrial Machinery in the form of Wind Turbines across vast areas of our rural landscape detracts from the natural and farming environment. The sense of peace is destroyed when Heavy Industrial Machinery is evident.

Destruction of the peaceful outlook of our rural and outback areas will diminish our attraction to tourists. The beauty of our States natural environment will be lost.

This is already happening; along the Highway toward Port Augusta we will soon have views of Turbines and Solar installations interrupting the view of the Lower Flinders Ranges.

If a tourist travels to the Flinders Ranges or other outback destinations and all they can see is a sea of Industrial Machinery they will not return. The States unspoilt rural outback will become less attractive to both residents and visitors. The peace and beauty will be lost.
SOLAR

The rush to install Large Scale Solar energy plants follows the uncontrolled rush and unexplored dangers of Wind Turbines. At no stage has there been scientific research into these large projects. It has simply been a case of expanding on the acceptance of Small Scale Rooftop Solar.

Page 7 comment ‘…can be an efficient land use with zero environmental impact after installation.’

Where is the evidence of this, has it been researched here in Australian conditions? To establish a properly and appropriate Policy there needs to be evidence to prove these massive Large Scale projects are safe and do not irreparably damage the environment.

Nowhere in Australia has this been done. YET it has been decided to forge ahead, with a setback distance of 500m from Conservation areas, 100m from Townships and rural living areas and only 30m from all neighbouring land.

Once again we have a ‘pick from the hat’ decision.

What about reflection has there been research conducted to ensure these projects don’t cause reflections that can be distracting to people living nearby, passing by in cars or on foot.

Do the panels issue any contaminants when highly heated?

What if there’s a storm and panels are damaged do they emit contaminants dangerous to humans and the environment.

What if there is a home or workplace/shed on or close to the boundary of a neighbouring property is there an additional setback.

Is 100m sufficient distance from an industrial site for homes?

Until appropriate research in the area of Large Solar installations has been conducted then humans and the environment are possibly being placed in danger.

ALTERNATIVE LOCATIONS FOR SOLAR

As for where these can be placed Solar Towers could be installed in industrial areas in and around Adelaide, all new high-rise structures could have a top floor accommodating Solar Panels and maybe even towers of solar panels.

To proceed at speed does not offer adequate protection and if future research proves dangers exist who will bear the cost to health and the environment?

The mistake to rush ahead with Wind Turbines without adequate research and Policy should have been warning enough not to repeat the error.

STORAGE BATTERIES

Presently and no doubt into the future these Large Scale Batteries will not be ‘base-load’ capable, but will be used as a form of ‘short circuit arrester’ for times when there is an interruption to the power supply.
Batteries to store excess production could be built anywhere there is no reason they cannot be placed in towns and cities. Excess energy does not have to be stored at the site of production.

However, there is a problem with this form of energy storage and that is we are in the infancy of using MASSIVE battery storage. We know small batteries we use every day can have problems of overheating, or simply exploding. Do we know this cannot happen with these collections of batteries joined together to create a Large Storage facility?

Placing them behind some form of fencing to ‘hide’ them from view can be utilised within towns and cities and they could be placed in areas the same as substations are.

But no matter where they are placed what if an accident happens; will the batteries explode and maybe catch fire and cause damage to surrounding areas? Will they contaminate the air and ground? If they can what would be the arrangements to contain damage and contamination? What if a problem causes a bushfire? Who will be responsible and who will pay compensation?

Again it’s the Government rushing ahead before consideration of consequences. This is a recurring theme.

DECOMMISSIONING

One item which is now being addressed but has no detail in the Discussion Paper is the process of decommissioning.

This should be a high priority when the first Wind Turbine Project was proposed, but it seems to have slipped below the horizon, fortunately for the companies.

The minimal attention to decommissioning to-date hopefully will be addressed in these Policy changes.

Currently it seems when a Wind Turbine project reaches its use-by date the process is to remove all above ground structure as well as the cabling and ‘rehabilitate’ the area, but leaving the massive concrete structures in the ground.

Concrete is one of the world’s most horrendous polluters, yet it is to be left in the ground!

These areas while proposed to have soil placed over the top will always have that dreaded concrete below the surface. Impermeable and a hindrance to the land being used for grazing or even cropping as the widely spaced concrete could make deep watering problematic.

Then over time when land changes hands will later owners know where these buried concrete obstructions are?

It’s sometimes suggested sites could be re-used with new turbines replacing the old ones. However, newer turbines are bigger and require larger footings; will they then need to put more concrete into the ground to accommodate larger turbines in different positions?

Will a new planning application for larger and differently spaced turbines be required?

Hopefully this will be addressed in changes to the Planning Code. Or are companies going to be able to side-step this issue?
Increasingly projects receive approval then companies makes a request to use larger and maybe fewer turbines, but they don't appear to have to put in any further environmental, noise etc reports and have them assessed, why not?

**DECOMMISSIONING who's responsible for overseeing?**

When decommissioning occurs the EPA should be on hand to ensure no contamination occurs and if it does it is immediately cleared up before the decommissioning progresses.

It should be mandatory for a record to be kept as to where and how all recyclable materials have been disposed of and anything that cannot be recycled should be disposed of in Government designated areas where companies pay a continuing ‘storage’ fee.

Prior to planning approval all companies should be required to place an independently assessed decommissioning fee into an account which cannot be accessed for any other purpose. This account will be transferrable to any other company that takes over the project.

Payment of a ‘storage’ charge will need to be negotiated between seller and purchaser and arrangements approved by the State Governments legal representatives.

There should also be a mandatory period set for the decommissioning to commence and be completed at the time of an application being approved and this should be set as close to the cessation of operation as possible as and not greater than 6 months.

**CONCLUSION**

More work needs to be urgently undertaken and Policy created to accommodate all aspects of these projects, we cannot continue to endanger lives and the environment when what we are meant to be doing is saving it.

"Act in Haste, Repent at Leisure",

Unfortunately it will not be Leisure but a Disaster that we will be repenting.

JA Rovensky
Supplementary to Submission dated 22 February 2019

Following from my original Submission dated 22 February 2019 I wish to comment further on the subject of Industrial Wind Turbines (IWT) with respect to State Planning Reform proposals.

Little has changed from the original discussion paper. There have been minor alterations with respect to IWT’s. The proposal for setbacks from properties and rural towns is far from adequate, with a minor setback distance of 2km from a towns boundary plus allowance for increasing IWT’s height of an additional 10mts per additional metre of increase height above 150mts, is far from adequate.

Further is the unquestionably discriminatory proposal for a fixed setback of 1.2 km from rural and farming homesteads not associated with properties where these projects are proposed and is designed to ensure those living and working on their own properties which are NOT associated with the projects will be impacted by the noise/sound/vibration and visual catastrophe of these IWT’s. Further, setbacks should always be from a non-parties property, not the turbine itself as if it is from the turbine is could mean a non-party neighbour has the exclusion area on their property leaving them with reduced access to their own land.

No account appears to have been taken in respect to the obvious fact that these IWT’s continue to be built with greater capacity and height, yet the ‘evidence’ those creating these proposed changes have not detailed any current evidence that they will not cause harm.

Evidence they appear to rely on to claim there cannot be any harm is some years old and even then there was considerable debate about the adequacy of much of the work provided by industry supporters as ‘proof’.

Setbacks are still being ‘chosen’, without rigorous investigation and before results of NHMRC funded research into the noise/sound emitted on human health has been concluded.

It is worth noting the lay-of-the-land is also important when sighting these turbines as many are being installed on undulating land and ridge-tops which can distort the visual as well as the noise impact. A turbine on a ridge can cause the perception of it being a lot more imposing on the viewer/resident.

More care needs to be taken in the positioning of these IWT’s especially with respect to the topography, visual impact, cumulative impact as well as things like biodiversity of a district, what the surrounding land is used for and of course the number of people living in the proposed district.

There is also nothing in the proposal detailing the manner in which noise will be monitored. This should be constantly checked for reasons detailed in my original Submission.

Currently it seems the EPA involvement in assessment is simply as an advisory body, yet the EPA is the body which would have to take action should a problem occur, especially if that problem was causing an environmental problem, including damage to human health.
Surely this should mean that they should be able to provide enforceable Directions to the projects owner.

The word ‘appropriate’ is used to describe places where these proposals are permitted, but no information is provided to explain what ‘appropriate’ relates to other than these areas are not a part of areas chosen as of highly visual importance.

This discrimination between other districts as being of less visual attractiveness is based on nothing more than a point of view of some who think tourism should be narrowed to a couple of areas of SA.

For instance the views to and from Mount Gambier and Mount Schank in the South East which offer vast distant panorama’s of the coastline and are not considered as being of tourist or even educational importance. That the districts consist of geologically quite recent volcanic events which created the districts many beauty and tourism adventures is brushed aside.

The coastal vistas around Eyre and Yorke Peninsula are also brushed aside, while the Barossa Valley and Fleurieu Peninsula are given special ratings.

There has been no serious consideration of what effect these massive Industrial Wind Turbines will have on people’s lives, farming, the natural environment or even tourism.

All decisions appear to have been made on flimsy consideration of the Renewable industries needs rather than on factual evidence.

There appears to be nothing in this proposal providing for biodiversity monitoring before and after installation. How do we know these IWT’s are not damaging the environment if consistent assessment throughout the life of the project is not undertaken, by independent assessors not associated to the project owner are not carried out and reported on.

When/if these are included and enforced then all information should be made available publically so researchers and others can monitor the ‘health’ of the area impacted.

Further to this if there is adverse impact project owners should have to be directed to resolve the problem and return the health of the environment so that it can quickly recover.

There still has been no inclusion of detailed policy on the decommissioning and rehabilitation of areas where these turbines have been installed, nor has there for the decommissioning of Large scale Solar projects and Large scale battery installations.

Who will be paying for decommissioning or rectification of land/environment should there be an equipment failure/ accident which causes damage to the local environment?

Nor is there any reference to protocols for addressing accidents large and small associated with these projects, especially if a problem should cause catastrophe to local residents, communities or the environment. Who will take responsibility for damage to property, health or income?
Not providing the ability for Appeal Rights once a project has been approved is discriminatory, as even murderers have the Right of Appeal, yet this very right is not available to citizens who have proof of concerns/reasons why a project should not go ahead.

The Right of Appeal needs to be available and it needs to be provided at a cost which is not prohibitive to any citizen of this State.

As stated in my previous submission conjoining projects should not be allowed due to the coupling and possible intensifying of noise/sound/vibration effects as well as visual impacts.

The EPA and the approval panels should be directed that they CANNOT approve a proposed project which is ‘conjoined’ to another whether the owner of the project is the same or not.

In conclusion below are quotes from RIO Declaration on which the process of ‘renewable’ energy production is based:

**PRINCIPLE 1**

Human beings are at the centre of concerns for sustainable development. They are entitled to a healthy and productive life in harmony with nature.

**PRINCIPLE 4**

In order to achieve sustainable development, environmental protection shall constitute an integral part of the development process and cannot be considered in isolation from it.

**PRINCIPLE 13**

States shall develop national law regarding liability and compensation for the victims of pollution and other environmental damage. States shall also co-operate in an expeditious and more determined manner to develop further international law regarding liability and compensation for adverse effects of environmental damage caused by activities within their jurisdiction or control to areas beyond their jurisdiction

**PRINCIPLE 15**

In order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.

*THE STATES parties to this Constitution declare, in conformity with the Charter of the United Nations, that the following principles are basic to the happiness, harmonious relations and security of all peoples: Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity. The enjoyment of the highest attainable standard of health is one of the fundamental rights of every human being without distinction of race, religion, political belief, economic or social condition.*

*Governments have a responsibility for the health of their peoples which can be fulfilled only by the provision of adequate health and social measures.*
Thank you for accepting my feedback.

However, I have recently become aware of a toxic gas that can be emitted by industrial wind turbines and would appreciate this information being passed on to those considering Planning changes, especially with respect to these turbines and where they are being installed as well as the setback distance from homes and communities.

Obviously it would be better if this gas SF6 was banned and all components of installed Turbines which have this ordered to have them removed and safe equivalents installed.

JA Rovensky

Please find attached my Response to the call for submissions to the above.

JA Rovensky
SF6, Cattle, and AI: the increasing need for an “AnaMin” policy in the EU

Credit: F.H. Campbell, CENTER OF NEURONAL REGROWTH - The Hague / New York City, Published on September 22, 2019, linkedin.com

There are actions now taken legally, on behalf of France’s farmers alarmed at the profound number of deaths of their livestock in fields that host so-called alternative environmentally-friendly wind turbines. There are also human complaints internationally. In all, the cause is frequently reported as a “mystery”.

But, this is hardly the case- and in fact, I argue that it confirms the need to change two policies: 1. on the standard for cloud network repository-driven AI that received government funding to help healthcare and climate policy and, 2. an urgently needed Anaesthetic Minimization policy (“Ana Min”)

Here’s why:

The cause of deaths points to the accumulation and persistence of leaked Sulfur Hexafluoride (SF6) gas from turbines.

Turbines use the SF6 gas as part of combustion-risk retardant.

The gas is heavier than air.

And so, by its very nature, leaks of the gas immediately drop to the lowest points of elevation around the area of the turbine. Wherever the gas lands, it starts to pool in increasing concentrations, and easily inhaled by the cattle grazing farmland. It can continue to leak into underground holes or crates with tethered rabbit warrens, relatively undisturbed by lighter natural air that flows around it.

Turbine engineers and their manufacturers know gas leaks from the motor-equipment unit and accordingly their volumetric non-dissipation rate. The data is in their design and known to academic researchers as well.
Upon inhalation, SF6 gas exchange occurs within small pulmonary arteries no differently than gas exchange to do with oxygen, except that it has a lower solubility rate and it affects the brain (nervous system) like an unmonitored anaesthetic that will disrupt, impair or even kill depending on dosage. For this reason, it is a neurotoxin with properties that inevitably affect living humans and animal neuronal systems including related side-effects upon ingestion or inhalation at persistent levels of exposure.

Discharge of SF6 from the turbines can be proven to accumulate in stable periods throughout the day and night. #French livestock loses its hygiene rank when the byproducts of SF6 exposure is found in animals that have been left to suffer not just one day but, a whole year. The signs include disruption to genetic and hormonal signal processing essential for healthy tissue-level interaction. How did France handle affected-livestock? Were they fed to humans or other animals?

And, why have European government-sponsored agricultural and medical academic “centers of excellence” as well as pharmaceutical manufacturers not stepped up to help? They have access to data and the specifications, enough to well have predicted SF6 relationship to increasingly visible symptoms in cattle and humans internationally. Its uses, indications and warnings are all data-based evidence which is provided to research and user-endpoints wherever manufacturing technology performance and turbine operation safety are part of certification trials, or as part of medical surgical and pharmacological information disclosure, international trade distribution and storage labeling.

If the lack of active reaction was not due to data-awareness, then it was due to a lack of an effective Anaesthetic Minimization policy, i.e., one that would identify SF6 risks – and any other similar property-generating compound before it was allowed to be discharged into high level of exposure on the surface working level of our shared environment and as a highly likely cause of the neurological dysfunction seen by the victims to-date.

In general, an AnaMin policy would

- Substantially reduce risk of amnesiac-related cognitive impairment, including Alzheimer’s Disease and related inflammatory-disease type dementia by 75% within 4 years (a bold prediction but, it is proven with data starting from 1933 that did not occur in disease affecting majority geriatric or women and girls of prior centuries).

- Reduce climate-change #globalwarming impact by 5-16% or higher in certain industries.
• Lead to much more curative medical standards of innovation in markets with surgical alternatives and cost-saving choices for ageing populations.

I am sorry the EU has no such policy.

I am also sorry that the data is there but, The correct healthcare and climate policy is not.

If these were in place, SF6 risk-factors would have popped up in a cellular geotimestamp on any research AI that was using #Google or #Copernicus tools, including proportional leakage volumetric dispersions calculated downstream and mappable to health risk levels for the farmers’ cattle. This should not to be confused with AI that is commercially promoted for higher-speed or accelerated storage-retrieval metrics, even if such are impressive for XR/VR endeavors on #NVIDIA servers. To me, today’s AI algorithms resemble what was built in the 1990s, still built for virtual models, still largely isolated and insensitive to “real” discrimination realities, some of which include the very corruption of their own data.

They are not able to predict relationships between hidden turbine gas leaks and cattle neurological dysfunction because they were migrated without intelligent sensitivity to real behaviors in diverse future scenarios, including those far outside the bandwidth of the developer team’s project goals.

At the very least, I hope this post can help clarify the so-called “mystery” between turbines and cattle in France.

If so, there are interim solutions that are pretty obvious to prevent more deaths and discomfort internationally. I do not need to describe those here.

F. Hanna Campbell, M.E., B.E.

Source: F.H. Campbell, CENTER OF NEURONAL REGROWTH - The Hague / New York City, Published on September 22, 2019, linkedin.com

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The expansion of electrical grid connections [due to wind, solar, and gas] has increased use of SF6.

It’s the most powerful greenhouse gas known to humanity, and emissions have risen rapidly in recent years, the BBC has learned.

Sulphur hexafluoride, or SF6, is widely used in the electrical industry to prevent short circuits and accidents.

But leaks of the little-known gas in the UK and the rest of the EU in 2017 were the equivalent of putting an extra 1.3 million cars on the road.

Levels are rising as an unintended consequence of the green energy boom.

Cheap and non-flammable, SF6 is a colourless, odourless, synthetic gas. It makes a hugely effective insulating material for medium and high-voltage electrical installations.

It is widely used across the industry, from large power stations to wind turbines to electrical sub-stations in towns and cities. It prevents electrical accidents and fires.

However, the significant downside to using the gas is that it has the highest global warming potential of any known substance. It is 23,500 times more warming than carbon dioxide (CO2).

Just one kilogram of SF6 warms the Earth to the same extent as 24 people flying London to New York return.

It also persists in the atmosphere for a long time, warming the Earth for at least 1,000 years.
So why are we using more of this powerful warming gas?

The way we make electricity around the world is changing rapidly.

Where once large coal-fired power stations brought energy to millions, the drive to combat climate change means they are now being replaced by mixed sources of power including wind, solar and gas.

This has resulted in many more connections to the electricity grid, and a rise in the number of electrical switches and circuit breakers that are needed to prevent serious accidents.

Collectively, these safety devices are called switchgear. The vast majority use SF6 gas to quench arcs and stop short circuits.

“As renewable projects are getting bigger and bigger, we have had to use it within wind turbines specifically,” said Costa Pirgousis, an engineer with Scottish Power Renewables on its new East Anglia wind farm, which doesn’t use SF6 in turbines.

“As we are putting in more and more turbines, we need more and more switchgear and, as a result, more SF6 is being introduced into big turbines off shore.

“It’s been proven for years and we know how it works, and as a result it is very reliable and very low maintenance for us offshore.”

How do we know that SF6 is increasing?

Across the entire UK network of power lines and substations, there are around one million kilograms of SF6 installed.

A study from the University of Cardiff found that across all transmission and distribution networks, the amount used was increasing by 30-40 tonnes per year.

This rise was also reflected across Europe with total emissions from the 28 member states in 2017 equivalent to 6.73 million tonnes of CO2. That’s the same as the emissions from 1.3 million extra cars on the road for a year.
Researchers at the University of Bristol who monitor concentrations of warming gases in the atmosphere say they have seen significant rises in the last 20 years.

“We make measurements of SF6 in the background atmosphere,” said Dr Matt Rigby, reader in atmospheric chemistry at Bristol.

“What we’ve seen is that the levels have increased substantially, and we’ve seen almost a doubling of the atmospheric concentration in the last two decades.”
How does SF6 get into the atmosphere?

The most important means by which SF6 gets into the atmosphere is from leaks in the electricity industry.

Electrical company Eaton, which manufactures switchgear without SF6, says its research indicates that for the full lifecycle of the product, leaks could be as high as 15% – much higher than many other estimates.

Louis Shaffer, electrical business manager at Eaton, said: “The newer gear has very low leak rates but the key question is do you have newer gear?

“We looked at all equipment and looked at the average of all those leak rates, and we didn’t see people taking into account the filling of the gas. Plus, we looked at how you recycle it and return it and also included the catastrophic leaks.”

How damaging to the climate is this gas?
Concentrations in the atmosphere are very small right now, just a fraction of the amount of CO₂ in the air.

However, the global installed base of SF6 is expected to grow by 75% by 2030.

Another concern is that *SF6 is a synthetic gas and isn’t absorbed or destroyed naturally* [emphasis added]. It will all have to be replaced and destroyed to limit the impact on the climate.

Developed countries are expected to report every year to the UN on how much SF6 they use, but developing countries do not face any restrictions on use.

Right now, scientists are detecting concentrations in the atmosphere that are 10 times the amount declared by countries in their reports. Scientists say this is not all coming from countries like India, China and South Korea.

One study found that the methods used to calculate emissions in richer countries “severely under-reported” emissions over the past two decades.

**Why hasn’t this been banned?**

SF6 comes under a group of human-produced substances known as F-gases. The European Commission tried to prohibit a number of these environmentally harmful substances, including gases in refrigeration and air conditioning, back in 2014.

But they faced strong opposition from industries across Europe.

“In the end, the electrical industry lobby was too strong and we had to give in to them,” said Dutch Green MEP Bas Eickhout, who was responsible for the attempt to regulate F-gases.

“The electric sector was very strong in arguing that if you want an energy transition, and you have to shift more to electricity, you will need more electric devices. And then you also will need more SF6.

“They used the argument that otherwise the energy transition would be slowed down.”
What do regulator and electrical companies say about the gas?

Everyone is trying to reduce their dependence on the gas, as it is universally recognised as harmful to the climate.

In the UK, energy regulator Ofgem says it is working with utilities to try to limit leaks of the gas.

“We are using a range of tools to make sure that companies limit their use of SF6, a potent greenhouse gas, where this is in the interest of energy consumers,” an Ofgem spokesperson told BBC News.

“This includes funding innovation trials and rewarding companies to research and find alternatives, setting emissions targets, rewarding companies that beat those targets, and penalising those that miss them.”

Are there alternatives – and are they very expensive?

The question of alternatives to SF6 has been contentious over recent years.

For high-voltage applications, experts say there are very few solutions that have been rigorously tested.

“There is no real alternative that is proven,” said Prof Manu Haddad from the school of engineering at Cardiff University.

“There are some that are being proposed now but to prove their operation over a long period of time is a risk that many companies don’t want to take.”

However, for medium voltage operations there are several tried-and-tested materials. Some in the industry say that the conservative nature of the electrical industry is the key reason that few want to change to a less harmful alternative.

“I will tell you, everyone in this industry knows you can do this; there is not a technical reason not to do it,” said Louis Shaffer from Eaton.
“It’s not really economic; it’s more a question that change takes effort and if you don’t have to, you won’t do it.”

Some companies are feeling the winds of change

Sitting in the North Sea some 43km from the Suffolk coast, Scottish Power Renewables has installed one of world’s biggest wind farms where the turbines will be free of SF6 gas.

East Anglia One will see 102 of these towering generators erected, with the capacity to produce up to 714MW (megawatts) of power by 2020, enough to supply half a million homes.

At a total height of 167 metres, the turbines at East Anglia One are 71 metres taller than the Elizabeth Tower at the Houses of Parliament which houses Big Ben.

Previously, an installation like this would have used switchgear supplied with SF6, to prevent the electrical accidents that can lead to fires.

Each turbine would normally have contained around 5kg of SF6, which, if it leaked into the atmosphere, would add the equivalent of around 117 tonnes of carbon dioxide. This is roughly the same as the annual emissions from 25 cars.

“In this case we are using a combination of clean air and vacuum technology within the turbine. It allows us to still have a very efficient, reliable, high-voltage network but to also be environmentally friendly,” said Costa Pirgousis from Scottish Power Renewables.

“Once there are viable alternatives on the market, there is no reason not to use them. In this case, we’ve got a viable alternative and that’s why we are using it.”
But even for companies that are trying to limit the use of SF6, there are still limitations. At the heart of East Anglia One sits a giant offshore substation to which all 102 turbines will connect. It still uses significant quantities of the highly warming gas.

What happens next?

The EU will review the use of SF6 next year and will examine whether alternatives are available. However, even the most optimistic experts don’t think that any ban is likely to be put in place before 2025.

Source: By Matt McGrath, Environment correspondent, 13 September 2019, bbc.com

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