THE IMPACT OF CLIMATE CHANGE ON HEALTH NEEDS TO BE IN FOCUS TODAY, NOT TOMORROW

Many things that affect the way the brain works can cause epilepsies. Some of these conditions like head injury in other people, a single bout of fever or a period of stress, which can also be a small thing, can have a huge effect causing such conditions.

For thirty years, Professor Sanjay Sisodia, professor of Neurology at CMC, Queen Square Institute of Neurology and UCL Institute of Neurology, has been treating people with epilepsy. "Over time," he says, "I became interested in the anatomy of epilepsy and how changes in genes lead to some of the rare and juvenile epilepsies. My work is a national referral Centre for people with difficult to treat seizures. Over time it became clear that some of the people with the most severe epilepsies had a genetic cause.

Understanding more about epilepsy means that experts like Dr. Sisodia can understand better how to manage epilepsy and how to help people with the condition. It is also important to understand the different treatments available and how effective they are.

The idea that there are some very specific treatments for epilepsy that can reverse the disease process is true in a way. The brain has some powerful treatments because we know so much about how it works.

In his work, Dr. Sisodia often gets to know patients with epilepsy and their families, and how these treatments can help them. Some families found that treatments such as magnets or diet changes helped to reduce their seizures.

Epilepsy syndrome is one of the most common of the neurological disorders and one that is affected by changes in brain temperature. When Dr. Sisodia and other researchers and experts have an event or a change in their environment, they have little or no effect. They report similar observations.

"That got me thinking about what the effects of climate change could be on these severe epilepsies," he says. "Even if we stopped all carbon emissions now, there would still be some embedded changes in the climate. So what would happen to people with these fatal epilepsies? If you have these conditions, your resilience may be compromised. If it could mean that our entire environment must necessarily deal with.

Most people with epilepsy have seizures that can be very much constrained, but that at least one in three people, current treatments do not fully control seizures, and there can be an impact on their wider family and support. Families and patients can develop a huge amount of stress to help their loved ones who have epilepsy. It is not just the 450 million people who have epilepsy that may be affected by climate change, but their families and healthcare providers.

A VIRTUAL EXCHANGE OF IDEAS ON THE HORIZON

Back in 2019, before the pandemic, we were going to have a virtual conference which will be a round table before we all settled matters on climate change. We were going to the IPCC, IPCC was one of the virtual conferences, and we were even thinking to lead the conference in India. India is a big country, and many medical teams were on the front line on the other side. So, finally, the conference is going to take place on November 21st.

The event has prominent speakers on climate change in general, climate change and mental health and related topics. Amongst neurology experts who are climate change, the key of the event is to help people working in the area of neuroscience have a real problem about climate impacts. Although most medical teams revitalize and experts work hard to seek access information in their field, they may not always have the opportunities to look more related to important developments apparently outside their own field, but their sage might have new ramifications consequences for their work.

The virtual conference will be a unique opportunity for researchers and medical experts to discuss the impact of climate change on mental health and the potential interventions that can be taken to address this issue. It will feature presentations on the latest research findings, as well as interactive sessions and opportunities for discussion.

About this issue

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AND NEUROLOGICAL HEALTH: IN SEARCH OF A VIRTUAL CIRCLE

The impact of climate change has an neurological dimension that may not be immediately obvious. Yet, as with other aspects of global warming, the relationship between the two-specifically, how global warming and the factors that drive it affect neurological disorders—is complex and profound. Neurological disorders are conditions that affect the brain, spine, and nerves, and the more than 600 million people who are affected by them are threatened by increasing infectious diseases, stroke, multiple sclerosis, Parkinson’s disease, Alzheimer’s and other forms of dementia.

Nearly one in six of the world’s population suffers from neurological disorders, of which 6.8 million died as a result each year, the Global Nervest estimated back in 2017. At rates of those suffering named neurological conditions have risen steadily over the years since, the overall number today is likely considerably more.

Some 65 million people around the world have epilepsy—this is the world’s most common neurological disease, for example. In the US, 3.4 million people were living with the condition in 2015. The Centers for Disease and Control and Prevention found—more people than ever before.

The reality is stark.

Although age-standardised incidence, mortality, and morbidity rates of many neurological disorders decreased for many countries from 1990 to 2015, the absolute number of people affected by, or remaining disabled from neurological disorders over the 25 years has been increasing globally.

CLIMATE CHANGE, POLLUTION, AND NEUROLOGICAL DISORDERS

The specific causes of neurological disorders vary and can include genetic disorders, congenital injuries, trauma, and exposure to toxins. But climate change is relevant to climate change, however, is another important factor impacting the lives of many—environmental health problems.

Many environmental health problems are caused by pollution, which is a major contributor to climate change.

Air pollution has been linked to Parkinson’s, for instance. Chronic exposure to fine-particle air pollution can lead to increased risk of developing Parkinson’s disease. Poor air quality can also cause neurological damage linked to a possible increase in dementia. Water pollution that contaminates drinking water can have an adverse effect on brain function.

Often, agriculture is a major contributor to water pollution in the form of herbicides, pesticides, and animal waste washed into rivers and streams. Over- exploitation of land—which along with growing consumer demand, drives farmers to use chemicals to get the most out of it—is a further contributor to climate change.

Prolonged exposure to heavy metals, air pollutants, pesticides, nanoparticles containing metals, and industrial chemicals were among common environmental risk factors for accelerating the deterioration of patients with Alzheimer’s disease, according to the researchers behind one 2020 report.

For some conditions, another contributor is temperature extremes. Some 62% of people with uncorrected severe vision losses experience an increase in their seizure activity during unusually hot weather, the US’s Epilepsy Society recently found. Likewise, a sharp dip in temperature has the same result, according to research in India.

Take a helicopter view, and the interconnections become clear. As climate changes, it is likely that as one component of the environment—such as epilepsy, the risk of injury, or even the likely health outcomes—will change, too.

Drill down further and the picture grows ever more complex.

GLOBAL WARMING AND DISEASE SPREAD

Global warming leads to certain conditions that lead to the spread of vectors for infections (often called "any living agent that carries and transmits an infectious pathogen to another living organism") that make epilepsy worse.

More climate-related change factors can alter the strength and potential of these living agents - impacting biting behavior or infection capacity, for example. Higher temperatures can also make more common the vector-borne diseases that can cause epilepsy seizures in the condition’s adults.

It’s not just the direct impact of the greater temperature extremes caused by global warming that can adversely affect a person’s likelihood to develop a neurological condition or suffer an existing neurological condition made worse, however.

The unintended consequences of human attempts to manage the climate—re-establishing forests, for example—can lead to increased risk of forest fires, which can cause neurological damage due to the air pollution it leaves behind.

Brain problems that arise from interactions with other animals normally wouldn’t create an opportunity for pathogens to get into new hosts, despite advances in sanitation and hygiene made in recent years. Further, climate change-augmented urbanisation and migration will further complicate disease prevention and control.

When it comes to COVID-19, climate change is not as yet a proven cause.

With evidence of a mechanism by which climate change could have played a direct role in the emergence of SARS-CoV-2, the virus that caused the COVID-19 pandemic in a recent study published in the Journal of the Total Environment, it is likely this will soon be accepted as one contributing factor.

In relation to neurological disorders, this is relevant for particular and notable reasons, the World Health Organization has found:

First, people with pre-existing mental, neurological, or substance use disorders are more vulnerable to SARS-CoV-2 infection and may pose a higher risk of severe outcomes and even death. Second, COVID-19 itself can inoculate neurological and mental impairments, such as delirium, agitation and apathy.

WHAT IS YOUR MAIN MESSAGE TO THE WORLD LEADERS AT COP26?

Cate Wilson, Chair of COP26, said: "We know that the world is in a climate, health crisis. In this moment of global crisis, there must be new solutions to old problems. Failure won’t do. Join us in Glasgow and let’s do it for each other, for the next generation and for everyone who we are and care for."

WHAT WILL CLIMATE CHANGE IMPACT YOU?

Cate Wilson, Chair of COP26, said: "Climate change is real and it’s already impacting all of us. If we don’t take action now, we’ll be experiencing it in our lifetimes. Join us in Glasgow and let’s do it for each other, for the next generation and for the planet."

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HEATWAVES AND THEIR EFFECTS ON THE BRAIN

There’s no arguing that the planet isn’t getting warmer. According to the WHO, heatwaves and hot weather are the most dangerous of natural hazards. Extreme temperature events are increasing in frequency, duration and magnitude. Between 2020 and 2024, the number of people exposed to heatwaves increased by around 153 million.

The American Psychological Association first coined the term ‘heat-anxiety’ in 2017, pointing to the impact of heat on our minds in relation to knowing its connection to climate change. But what happens to our thinking is one thing; something different could be happening to our actual brains.

For some people with epilepsy, the effects of climate change interact with their bodies directly. For the brain itself, this common syndrome – a form of epilepsy that starts in infancy and can have mild to severe effects – may be affected by changes in ambient temperature. Anecdotally, heatwaves can be dangerous for people with Dravet syndrome and some experience more frequent seizures.

Even those who don’t have epilepsy will start to feel the effects of heatwaves on the brain. Cognitive function may slow, making it harder to make decisions, work or learn. A recent study by the Harvard T.H. Chan School of Public Health suggested that a heatwave can make your thinking 10% slower.

Along with being hot, the Harvard research states that heatwaves present other dangers to the brain from lack of sleep to dehydration, both of which can be dangerous in themselves and lead to further effects. When we’re sweating in the heat, that water needs to be replaced frequently, and in countries without access to clean water supplies the risks of dehydration are severe.

Heat stress can also be a dangerous condition. Lay Vearnst, a neuroscientist at the University of Illinois Urbana-Champaign, has pointed out that at high temperatures, the blood-brain barrier can break down. This causes unwanted proteins to build up in the brain, causing inflammation and interrupting normal function.

Research to a survey conducted by the Epilepsy Society, where almost 1,000 people responded, found that over half of respondents saw a change in their seizure activity during very hot weather. This included an increase in frequency, severity, or extra seizures when they had felt their epilepsy was generally under control.

Epilepsy is a global neurological disease, but numerically overall it does affect more people in low to middle income countries. People living in poverty with no, or difficult, access to medication are more likely to suffer with epilepsy or its consequences. These regions of the world are also more likely to feel the impact of climate change and extraordinary heatwaves.

The planet’s average surface temperature has risen around 1.8°C since the late 19th century. According to the Met Office, climate change has made the previous record-breaking 2018 UK summer heatwave thirty times more likely and, by 2050, heatwaves like this could happen every other year.

On a global scale, the increasing temperature of the planet is having an effect on our brains - not just on what we think, but also how our brains function. This is not a future speculation but a current impact, and if we don’t do something to change the situation, then many people with epilepsy will be facing an even more challenging future.

THREE WAYS TO PROTECT THE PLANET AND YOUR OWN NEUROLOGICAL HEALTH

Climate change and pollution are adversely impacting our neurological health. What can we do?

If climate change, and the fear you can do little to tackle it, makes you stressed and anxious, you are not alone. In a survey of young people most of whom had experienced anxiety, a third of the thrice of respondents said climate change left them feeling anxious, while almost a third of the quarter said they thought the future was frightening.

The mental health consequences of events linked to a changing global climate - from mental stress and distress, through high-risk coping behaviour such as increased alcohol use and, occasionally, mental disorders such as depression, anxiety, and post-traumatic stress - have now been acknowledged in a report by the American Psychiatric Association.

Further distress associated with environmental change close to your home may even have its own word: ‘localclimateanxiety’ or wastexiety, according to the Lancet Commission on Mental Health and Climate Change. Wastexiety is connected to another term: ‘weirdease’ - defined as collective anxiety about one’s environment, that a person is powerless to do anything about.

But while awareness of climate anxiety may be growing, so too is the understanding that the positive benefits people can gain from a sense of control.

People who feel in control of their lives and who find purpose and meaning in the are less likely to have anxiety disorders - even when going through the toughest times, according to one recent study. This has positive implications within the context of climate change.

In short, you may feel less anxious about global warming if you do something to reduce your own carbon footprint, or you could stand to reap other health benefits, too.

1. WALK MORE

Much evidence points to being more active - if possible, taking part in regular, heart-pumping exercise - as the number one thing you can do to improve brain health. According to James Pappas neurologist Barry Gordon MD, PhD he says there are benefits to be gained no matter what age you are, and that the benefits, of course, will be good for the environment, too.

To avoid breathing in air pollution from cars on the road, try walking or taking alternative traffic-free routes. If you’re not a runner, consider car sharing.

2. EAT BETTER

Diet plays a large role in brain health. It is also a contributing factor in global warming. Greenhouse gas emissions from the meat industry generate 14.5% of all global greenhouse gas emissions and animal farming is a leading cause of deforestation.

According to the Mayo Clinic, eating less meat and moving towards a more plant-based diet will help both the planet and your mental health. According to some estimates, animal agriculture is not only the major source of greenhouse gas emissions, it is also accounting for over 50%. A Mediterranean diet, on the other hand, has been shown to have a positive impact on people with anxiety, depression and healthy fats such as salmon, while incorporating much less meat overall.

Vote with your wallet by supporting brand owners and retailers with transparent environmental and sustainability strategies.

3. BREATHE EASY

Air pollution has been closely linked to several neurological disorders by multiple studies. Discussions at the World Congress of Neurology suggested that air pollution increases the risk of Alzheimer’s disease, Parkinson’s and dementia. It can also be a trigger for asthma.

Identifying your air quality at home by keeping rooms well ventilated, removing and ‘drying’ pet, plant, and soil and liquid cleaning products instead of sprays which can be breathed in. The British Lung Foundation also recommends that people dry their hair at home, and when your clothes are dry they are kept free of static, or above in winter months to avoid condensation.

By checking your home’s Energy Performance Certificate, you can see where there may be ways for improvements. For example, installing better insulation or using more efficient appliances can help. The walking and cycling charity Sustrans, also recommends switching energy suppliers to lower rates.

It also says that you can live in urban area, consider planting trees or installing a rooftop garden - both of which can help improve the air quality in your neighborhood in the long-term. This can also help to reduce heatwaves and extreme temperatures in urban areas due to the proliferation of concrete.

The idea of changing climate cannot seem overwhelming, but these small steps can make a big difference, particularly when many people make changes together. It is also important to remember that we are all connected to the future of the planet and the climate change could bring great changes of anxiety - just by knowing we are doing our bit.

EUROPEAN HEATWAVE FACTS

Climate change made the 2019 European heatwaves at least 5 X likelier 2015, 2016, 2017 and 2018 were all warmer than any year since 1850

Extreme heatwaves are going to be much more common Deaths from heatwaves are projected to climb steeply

UN Climate Change Conference UK 2021 - COP26

THE ENVIRONMENTAL ISSUE
The environmental issue

ARE NOT THE WAY TO CREATE ACTION ON CLIMATE CHANGE

De Meyer says "in the case of successful health-behaviour changes, it's all related to the individual. However, for climate change, we are asking someone to change their behaviour to benefit others rather than the individual and so the usual incentives are not aligned in the same way.

There has been some successful research that indirectly links to climate change. Take marketing for plastics, for instance. In 2007, Billboards for Buying Lab commissioned research on social media to understand responses to the words 'vegetable' or 'plant-based'. Vegan was more than twice as likely to be chosen as the descriptive contents of a 'plant-based'. This had an impact on the way vegan food can be successfully marketed and a possible follow-on result for climate action. But direct nudges at the level of the individual are few.

He's De Meyer says that part of the problem is the complexity of the issue. Many people have good intentions toward saving the planet. But if you have family on the other side of the world and can get them to plane, a clash of values easily arises.

In other cases, it's just a matter of not knowing what you need to do or if you have the skills to do it. "If you find yourself in a busy A&E department and you have the right medical training, you will know what to do, whereas if you're a layperson, you will know how to act. When it comes to climate change, we are all laypeople. Very few of us have agency to make change."

Lack of agency - or feeling as though you have no options to act - is very common. "Imagine you are a small apple on a tree, you are con-

Tropical disease could re-emerge in temperate climates including UK

Malaria is a disease we're forbidden from talking about, yet there's something we really only consider if we're having a really bad day. Malaria. But what if it became a concern in the UK - and expect a fever that global warming could see it as a threat in the future?

Between the 17th and 19th century, malaria was a leading cause of death in many areas of Britain, like the East Anglian plains and the low independent counties in England was declared as recently as the 1950s.

Scientists are warning that if climate change continues unabated, the country as we know it could hold around river estuaries and bay-water meadows across the UK, and that suggests a re-emergence of what was commonly found in Britain, called Anopheles atroparvus.

Temperature ranges and the risk of flooding caused by climate change might be the main factors attractive for mosquitoes and could have a twofold effect: it could cause British mosquitoes to breed more frequently and if it arrived in the country, it would put a strain on the eradication of the malaria parasite.

As well as the Feis, incidences the area most affected by malaria included the Thames Estuary and South-East Kent. Inhabited in East Yorkshire, the Lommerian Levels and other areas bordering the Severn Estuary and around the fit of the Berkshire.

Researchers have calculated that if global warming continues, at its current rate, some of these same areas could once again become breeding centres for malaria, for up to four months each year by the end of this century.

People have been infected when bitten by a mosquito carrying a parasite that causes malaria, which then gets transmitted to the human host through mosquito bites. Cause high fever, chills, flu-like symptoms, fatigue, headache and muscle pain.

More serious life-threatening cases can cause brain swelling, brain damage, brain damage, brain damage, stroke, fever, and coma. People can die if left untreated. As a general rule, people with a fever, a headache, and a rash are considered to have malaria.

Even now, WHO recorded 229 million malaria infections and 430,000 malaria deaths in 2019 worldwide, mostly of children under the age of five.

Death rates have plateaued over the last few years because mosquitoes are becoming increasingly resistant to insecticides, so climate change is even more of a concern. "WHO has labelled malaria as the worst emerging health threat that could kill at least another 605,000 deaths by 2050."

It is already creeping back into Europe. In 2018, Italy, which was declared malaria-free in 1970, had a number of cases in people who had not travelled abroad.

And experts say some places in the UK could become warm enough for the mosquito to live to cause a potential malaria outbreak.

Plus, disruptive climate change is already here - 2019 was the hottest temperatures ever recorded, and 2020 may well be the hottest recorded on June 26th of February in London and 33.7°C in Cambridge on the 29th of July.

In 2020, it was the wettest February on record and the year 2020 was the third warmest, fifth wettest and eighth sunniest on record.

So for this year, July saw the hottest day ever recorded in Northern Ireland, and forecasted its hottest fourth-hottest summer ever. Meanwhile, London, East Sussex and many parts of Southern England saw temperatures of average summer rainfall and the type of wildfire events seen over summer 2004.

Experts say that in the space of 10 years, the UK has become a lot warmer than it has been in the past. "It's clear that urgent action needs to be taken to combat climate change and with it, the change of malaria re-emerging in the UK. As a result, it's not only the health implications but also the economic consequences, the risk of more people losing their homes and jobs, and the loss of biodiversity that will have serious implications."
SCOTLAND PLEDGES NET ZERO EMISSIONS

When we think about the phrase “climate change,” more often than not, we imagine rising sea levels and melting ice caps. But climate change affects everything around us, from the weather we experience to the food we eat. It is a phenomenon that requires us to take action today to ensure a safer future for all.

The Scottish Government has set a target of net zero emissions by 2045. This ambitious goal aims to reduce greenhouse gas emissions to zero by that year, thereby ensuring a sustainable future for the planet.

This commitment is crucial, as climate change has already had significant impacts on Scotland. For instance, extreme weather events such as floods and droughts have become more frequent and severe, posing a threat to homes, businesses, and the environment. Climate change also affects the availability of freshwater resources, which is critical for both human and agricultural needs.

To achieve this target, the Scottish government has outlined a comprehensive plan that includes measures such as increasing renewable energy production, improving energy efficiency in buildings, and supporting the transition to electric vehicles. These initiatives are designed to reduce greenhouse gas emissions across various sectors, including transport, agriculture, and manufacturing.

The government has also pledged to invest in research and innovation to develop new technologies and solutions to mitigate the effects of climate change. This includes investing in green energy projects and research into sustainable agriculture and forestry.

In addition, Scotland has committed to supporting international efforts to combat climate change. The country is a signatory to the Paris Agreement, which sets a global target of limiting global warming to well below 2 degrees Celsius.

The Scottish government’s commitment to net zero emissions is a step in the right direction. However, it requires ongoing efforts and commitments from all stakeholders, including individuals, businesses, and governments, to ensure that we reach this ambitious target.

In conclusion, Scotland’s commitment to net zero emissions is a testament to its leadership in addressing the global challenge of climate change. By working together, we can create a sustainable future for generations to come.
CLIMATE CHANGE IN MIND

HOPING FOR CLIMATE CHANGE ACTION AT COP26

“My son couldn’t control his body temperature; he got very red, and then if he was in water and cooled down too quickly, it would also set off a seizure – and one seizure can mean weeks in hospital.”

When he was three years old, Gala Wilson’s son Arlo was diagnosed with Dravet syndrome, a rare and severely disabling type of epilepsy. Seeking support from other parents in the same position, she contacted DSUK (Dravet Syndrome UK) and a couple of years later she became chair of the charity.

This month, Gala, in her capacity as chair of DSUK, is speaking at the Epilepsy and Climate Change Conference, where she will highlight the impact of global warming on the lives of people living with Dravet syndrome and the families who care for them.

Despite the devastating consequences that climate change has already unleashed on the world, it can still be a fairly abstract concept for some people and the prospect of warmer summers are a guilty upset of a catastrophic change.

However, for Gala, Arlo and the many other families around the world affected by Dravet syndrome, hot weather is dangerous and trying to keep cool is a constant challenge. Heat and sudden temperature changes can bring on a seizure, particularly in younger children whose bodies are less able to regulate their temperatures.

Gala explains: “Most parents just have to think about finding shade, but when it’s hot a lot of our families won’t take their children out, because the moment they step outside they could have a seizure. The heat is really hard to manage. Our forums are full of people talking about how to deal with the heat – many have to install air conditioning or wear cooling vests and special neckties to try and keep their core temperature low.

“My son couldn’t control his body temperature; he got very red and then if he was in water and cooled down too quickly, it would also set off a seizure – and one seizure can mean weeks in hospital. Now that he is 14, his body mass means his seizures have abated slightly, so it’s a bit easier, but it can be hard to manage and we still have to use fans at night.”

Gala used to work as the director of a large team in healthcare PR and was planning to return to work after Arlo was born. He had his first seizure at ten weeks old and it became clear that she would need to take some extra time off, but on a visit to her company to negotiate her return, Arlo had a seizure in the office and Gala knew that she would have to stop work to focus on him.

As well as caring for Arlo and having another child, Gala spends a lot of time connecting families, providing them with emotional, practical and financial support, raising awareness, keeping up with medical experts, supporting research and fundraising in her role as chair of DSUK. She also keeps up regular communication with Dravet syndrome organisations in Europe and the US to build international co-operation and learning.

At the global Epilepsy and Climate Change Conference, Gala’s talk will be on heatwaves and Dravet syndrome.

“In some climates, you can’t go out for months because of the heat,” she says. “As summers become warmer the problem is only getting worse and it can be hard to keep a child with Dravet syndrome indoors. I want to highlight what it means practically for our families and to get it taken seriously.

“It’s not just about the weather getting warmer, there are real life day-to-day health issues. In some ways my message is selfish, because we want to protect our children as much as possible and global warming is an additional burden we could do without.”

Gala will be monitoring COP26 very closely, hoping that the world leaders can together make some real progress on tackling the climate emergency. She says: “I hope it brings meaningful change, not just more waffle. I’m not an expert, I’m a consumer, but a consumer whose life is affected by climate and the world is heating up at an alarming speed.”

As always, she will be sharing her learnings with the other families who are part of the DSUK community that is so important to her. Despite having many of the symptoms, Arlo was not diagnosed with Dravet syndrome until he was three and a half, so his first years were a lonely time for Gala. Her son’s seizures were testing well over an hour, she was making regular trips to A&E and lived with the constant fear that she would lose him – all of which was made even more difficult to handle because of the lack of a support network.

As soon as she got a diagnosis, she immediately contacted DSUK and within three weeks she was at the annual Centre Parcs trip, meeting other families whose children share the condition.

For Gala, the diagnosis came as a relief, although for many families it can be a particularly challenging time, as they struggle to come to terms with such an extreme condition. For all of them though, being connected to other families through DSUK is a source of strength. Also, the closed Facebook forum is a particularly important space, a safe place reserved for parents and carers, where they can talk about the wider challenges of living with a child who has Dravet syndrome, as well as sharing more practical information.

There are around 350 members of the Facebook forum, and nearly 600 families registered with DSUK in total. Usually, about 50-70 new families join every year, but Gala says there has been a ‘massive decline’ in new members during the pandemic, which could be due to reduced testing and diagnosis, or to less exposure to the viruses that usually trigger the first seizure.

When she takes to the platform at the first global Epilepsy and Climate Change Conference, Gala will be doing more than just talking about the impact of global warming and sharing the knowledge, skills and experiences she has accumulated - she will also be furthering her important work in raising awareness of Dravet syndrome and building the Dravet syndrome community that has made such a difference to her own life.

https://www.dsuk.org.uk/
EPILEPTIC WARRIOR CALLS FOR AWARENESS ADVERTISING CAMPAIGN

S

ty-year-old Earnesta Ellis Lumbis is a force to be reckoned with. A social media influencer, her current studying a bit of computer science at the University of Southern Mississippi, this self-described "morning warrior" has already made a name for herself in the epilepsy community. Her blog, "Ellie's Adventures in Epilepsy," has become a go-to resource for young people and parents alike, offering insights into living with the condition and advocating for more awareness and support.

Ellie's passion is not just her love for writing and sharing her experiences, but also her desire to help others navigate the challenges of epilepsy. Her tireless efforts have earned her the nickname "Epileptic Warrior," a term she wears with pride, recognizing her strength and resilience in the face of a condition that can be devastating.

Ellie's call to action comes after a recent study published in the Journal of the American Medical Association revealed that only 1 in 5 patients with epilepsy in the United States have access to medications that are effective in controlling seizures. This stark reality highlights the Urgency of increasing awareness and support for those living with epilepsy.

"We need more funding for research," Ellie argues, "and we need more visibility for epilepsy. The public needs to understand that epilepsy is not just a medical condition, but a lived experience for millions of people around the world."

Ellie suggests several steps that can be taken to increase awareness, including support groups, educational campaigns, and social media initiatives. "We need to change the narrative," she insists, "and show people that epilepsy is not a choice, it is a condition that affects people in different ways."
Y
ou won't have spotted it when you picked up this paper today, but surely holding Living Ink. The ink that has been used to print this issue comes from sugar cane algae waste, it doesn't sound glamorous and it's not really — but sustainability is not always glamorous.

Living Ink is working to change the way we print things, from newspapers like the one in your hands to textiles, even ski boots. It predominantly makes black ink — which you might think is limiting, but take a look around you now and see how many items of clothing and other products such as phone covers, headphones and shoes are black. That's all black ink. The black ink we've historically used to print most things is made from the petroleum-based carbon black. Living Ink is working to replace petroleum-based products such as carbon black ink. While the ink can produce different colours, it's the overthinking need for a black ink replacement that has caused Living Ink to focus on this one, ubiquitously shade.

HOW IT WORKS

Algae is grown in a large scale. It grows very quickly in the province's sunlight, water and carbon dioxide. The algae is then collected and formed into consistency with similar characteristics to carbon black. The final product is very black and doesn't fade when exposed to UV light. This makes it suitable for use in a wide range of versatile products.

Printing anything at all might not seem like the most sustainable option, but it does make you see are able to meet about the work of EPCC and acne, and climate change is having an impact on those with acnes and other physical conditions, we decided to get a traditional paper in your hands so you can read it — in black and white.

Living Ink was co-founded by Scott Fabrikant, who, along with Steve Robinson, also teachings out of the lab with a research focus on practical applications and the hope of having a positive impact in the world. To create the ink, the firm collects algae waste products and processes them to create a dark, rich pigment, useful for a variety of products.

From an optimistic standpoint, Living Ink has grown and now has a large production facility in Denver. Colorado is working with international brands, algae farms and printing facilities where the ink pigment can easily be applied to different products.

While the pandemic has hit many industries hard, it ap-
pears to have also provided time for business leaders to consider where their resources come from, and the impact they have. Fabrikant says that it was during pandemic lockdowns that a new wave of inquiries came in from investors, entrepreneurs, brands and textile re-
cyclers such as Sri Lanka, Vietnam and China.

Living Ink is currently producing 500 kilograms of algae ink per day. The facilities used to create the ink are easily scalable, and can adapt to suit many different industry sectors.

As brands and businesses have boardroom discus-
sions about sustainability, it's not just packaging and plastics that are a top fly priority. The environmental impact of petroleum-based carbon black is also an important consideration. This shift towards awareness of entire product ecosystem is to be seen that companies that are keen to meet consumer demands.

Consumers are becoming hyper-aware of the condi-
tion at the environment. Leaders around the COP26 meeting are trying to project that the state of the planet today, and to the future. An important theme with an urgent need for change. It is this awareness that is changing industries as the public are looking to understand the harms they are responsible for. Demand for information that consumers can access across the pro-
duct and services we use today and the impact they have, the more consumers are driving, and calling for radi-
cal change.

The paper used to carry this ink was made by Mitsubishi Renewables. This company is driven by a desire to enable consumers to design and recycle their own products, rather than being forced to use products that are already in existence. This means that consumers can access across the pro-
ducts and services we use today and the impact they have, the more consumers are driving, and calling for radi-

You might not be able to reverse climate change on

timescales by next week, but it's vital that there is a change for this planet, for the health of its citizens and for the future of all of us. There are small steps — like print-
ing this newspaper with less made from algae — that don't seem like a whole solution. But when 4.5 billion kilograms of ink are produced worldwide for printing products, just this one step turned it into a change, and if that ink was sustain-
ably produced.

TIME IS OF THE ESSENCE

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It's all up to us to take the initial small step to see change on a grand scale.

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"We found this project particularly exciting because it was a real breakthrough. A climate change tool that specifically focused on neurological con-
sciousness," says Thurman Brown, CEO of The National Brain Appeal. "Essentially, as humans, we are our brains and if we find that climate change is affecting how we perform, then this is really cru-
icial. We saw that this could start a wider conver-
sation and expand towards other conditions in the future.

The other aspect we liked about the project is that it involves research that doesn't have an impact quite quickly, rather than being years to be practical use. For example, it could impact some of the latest tech-

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