Epidemic of chronic kidney disease among the most disadvantaged of tropical countries and scientific censorship.

The long arm of Monsanto: chronicle of an unprecedented ignominy

By Luis Carlos Silva Aycaguer, PhD

(1) The epidemic of chronic kidney disease.

The criminal record of Monsanto, a transnational company devoted to the production and commercialization of agrochemicals, is extensive and fairly well known.
Actions such as systematic concealment of inconvenient evidence, handling of influences or maneuvers to disqualify agencies and researchers that point out any harmful effect of their productions, have prompted numerous denouncements and sanctions.

The facts we address, nevertheless, have their root in a tragic sanitary reality that, in principle, would seem not to involve this company. Our subject is an epidemic of Chronic Kidney Disease that emerged with force at the beginning of the present century in some specific locations of the planet. El Salvador and Nicaragua in Central America, as well as Sri Lanka and southern India are, by far, the most affected territories. This phenomenon and its unique features have been gradually coming to light in recent years.

The epidemics that have emerged in the aforementioned Central American and Asian countries are strikingly similar, as shown by the following table taken from a study carried out by a team of researchers from Sri Lanka, Cuba, El Salvador and Belgium.
<table>
<thead>
<tr>
<th>Comparison of Chronic Interstitial Nephritis in Agricultural Communities (CINAC) in Sri Lanka and Central America</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Primary among</strong></td>
</tr>
<tr>
<td>Diabetes</td>
</tr>
<tr>
<td>Hypertension</td>
</tr>
<tr>
<td>Glomerulonephritis</td>
</tr>
<tr>
<td><strong>Risk factors</strong></td>
</tr>
<tr>
<td><strong>Clinical features</strong></td>
</tr>
<tr>
<td>Asymptomatic (early stages)</td>
</tr>
<tr>
<td>Loss of appetite</td>
</tr>
<tr>
<td>Lethargy</td>
</tr>
<tr>
<td>Backache</td>
</tr>
<tr>
<td>Insomnia</td>
</tr>
<tr>
<td>Arthralgia</td>
</tr>
<tr>
<td>Muscle ache</td>
</tr>
<tr>
<td>Cramps</td>
</tr>
<tr>
<td>Dysuria</td>
</tr>
<tr>
<td>Foamy urine</td>
</tr>
<tr>
<td>Neurological abnormalities</td>
</tr>
<tr>
<td>Liver enzyme level</td>
</tr>
<tr>
<td><strong>Urinary findings</strong></td>
</tr>
<tr>
<td>Hypermaturia</td>
</tr>
<tr>
<td>Hyperphosphaturia</td>
</tr>
<tr>
<td>Hypercalcium</td>
</tr>
<tr>
<td>Proteinuria</td>
</tr>
<tr>
<td>Beta2 microglobulin, NAG, NGAL</td>
</tr>
<tr>
<td><strong>Blood</strong></td>
</tr>
<tr>
<td>Hyponatremia</td>
</tr>
<tr>
<td>Hypokalemia</td>
</tr>
<tr>
<td>Imaging</td>
</tr>
<tr>
<td><strong>Histopathology</strong></td>
</tr>
<tr>
<td>Tubulointerstitial nephritis</td>
</tr>
<tr>
<td>Interstitial fibrosis</td>
</tr>
<tr>
<td>Tubular atrophy</td>
</tr>
<tr>
<td>Interstitial monocellular cell infiltration</td>
</tr>
<tr>
<td>Glomerular collapse</td>
</tr>
<tr>
<td>Fibrous intimal thickening and arteriolar hyalinosis</td>
</tr>
<tr>
<td>Immunofluorescence tests</td>
</tr>
<tr>
<td><strong>Other features</strong></td>
</tr>
<tr>
<td>Heat stress and dehydration as the primary causal factor</td>
</tr>
<tr>
<td>Geographical distribution is not coherently explained. No disease in the northern province (same climate) where agrochemical has not been used.</td>
</tr>
<tr>
<td>Natural contaminants in ground water</td>
</tr>
<tr>
<td>Major occupational toxicants in the endemic regions</td>
</tr>
</tbody>
</table>
In each of these four countries, hundreds of thousands of people (mainly men dedicated to agricultural activities, but also women) suffer from this disease, and tens of thousands have died for that cause. To a large extent, they are relatively young people (under 60 years old, including children), free from the ailments that typically precede and cause the appearance of CKD: mainly hypertension and diabetes. This type of CKD has been called “Chronic Kidney Disease of Non-Traditional Causes” (ERCnT). The absence of traditional causes in the clinical pattern has prompted some to invoke an enigma or mystery as possible causes of the epidemic.

https://science.sciencemag.org/content/344/6180/143
(2) A long-standing epistemological debate

In this context, two fundamental causal hypotheses have been suggested. On the one hand, the prolonged exposure to agrochemicals, especially of agricultural workers.

Chronic kidney disease

Chronic kidney disease mortality trends in selected Central America countries, 1997–2013: clues to an epidemic of chronic interstitial nephritis of agricultural communities

Pedro Ordunez¹, F Javier Nieto², Ramon Martinez¹, Patricia Soliz¹, Gloria P Giraldo¹, Susan Anne Mott³, Wendy E Hoy³

https://jech.bmj.com/content/72/4/280.long
In addition to exposure by direct contact with such products, some of them well known as nephrotoxic, subjects may have suffered from air, water or food contamination. The presence of the disease (even in its ERCnT variant) not only among workers, but also among women and children, as well as non-agricultural adults and adolescents, adds plausibility to this conjecture.

On the other hand, the hypothesis that attributes etiological prominence to prolonged exposure to high temperatures, in a strenuous work environment, has been proposed, to which i dehydation due to inadequate fluid intake is also added. According to this conjecture, dehydration (which by itself compromises kidney function through accumulation of nephrotoxins) would lead to successive subclinical episodes of acute kidney damage. This course of action could end up in chronic dysfunction of this organ.

A more comprehensive model, supported by several researchers who have concentrated their research efforts in El Salvador and in Sri Lanka, is not committed to any specific conjecture, but admits that both explanations are plausible and could act synergistically.

However, over the years there has been a process of systematic underestimation or even direct concealment, of the first of the aforementioned hypotheses. Several papers published in reputable journals, do not grant potential prominence to pesticides and attach almost exclusive causal role to strenuous work under high temperatures.
As can be seen, under the heading “Leading hypotheses”, is the paper stated that:

“Currently, the strongest hypothesis for MeN is that repeated heat exposure and dehydration resulting from strenuous work in tropical climates may be the key risk factor or an essential cofactor. These episodes are believed to lead to subclinical acute kidney injuries that develop into chronic damage over time”.

CKD of Unknown Origin in Central America: The Case for a Mesoamerican Nephropathy

Ricardo Correa-Rotter, MD, 1 Catharina Wesseling, MD, PhD, 2 and Richard J. Johnson, MD 3

An epidemic of chronic kidney disease of unknown origin has emerged in the last decade in Central America and has been named Mesoamerican nephropathy. This form of chronic kidney disease is present primarily in young, high-risk farmers from communities along the Pacific coast, especially workers in the sugarcane fields. In general, these men have a history of manual labor under very hot conditions in agricultural fields. Clinically, they usually present with normal or mildly elevated systolic blood pressure, asymptomatic yet progressive decline in estimated glomerular filtration rate, low-grade non-proteinuric proteinuria, and often hyperuricemia and or hypokalemia. Diabetes is absent in this population. Kidney biopsies that have been performed show a chronic tubulointerstitial disease with associated secondary glomerulosclerosis and some signs of glomerular ischemia. The cause of the disease is unknown. This article discusses and analyzes some of the etiologic possibilities currently under consideration. It is relevant to highlight that recurrent dehydration is suggested in multiple studies, a condition that possibly could be exacerbated in some cases by other conditions, including the use of nonsteroidal anti-inflammatory agents. At present, Mesoamerican nephropathy is a medical enigma yet to be solved.

INDEX WORDS: Chronic kidney disease; Mesoamerica.
Another paper contends that, although the cause of the disease is unknown, when analyzing and discussing some of the etiological possibilities currently under consideration, the sole statement is:

“that recurrent dehydration is suggested in multiple studies, a condition that possibly could be exacerbated in some cases by other conditions, including the use of nonsteroidal anti-inflammatory agents”

Those papers completely ignore the possible role of agrochemicals and overlook that the phenomenon also occurs in children and women who do not work in agriculture, while it does not appear in territories with similar working environments and analogous climate conditions (for example, Cuba, a country that, together with Canada, exhibits the lowest CKD mortality rate in the Americas, 20 times less than in El Salvador), nor among operators of non-agricultural communities, who work in conditions of extreme temperatures: hot rooms, foundries, brick factories, bakeries, chemical plants, road construction or steam tunnels.

![Graph showing CKD rates](image)

J.Epidemiol Comm Health 2018;72:280-286

(3) Global warming emerges as villain

More recently, some authors have begun to consider “global warming” as “the cause of the cause”. This would be the real propitiatory cause behind direct agents. It appeared for the first time in press releases like the following one:
Ramón García Trabanino, then president of the Association of Nephrology and Hypertension of El Salvador, stated that, after all, working conditions and global warming were the actual killers of those affected.

Then, the idea of blaming global warming began to appear in scientific journals.
In other words: according to these researchers, the fundamental cause would be the high temperatures under which affected people work and the insufficient hydration; but the cause of such a cause would be the global warming. The most notable and obvious weakness of this argument is that, if global warming explains the irruption of the epidemic, it would be global as well, instead of concentrating on half a dozen points of the world, especially in areas of only four countries.
(4) The American Association for the Advancement of Science (AAAS) and its annual Award for Scientific Freedom and Responsibility

The American Association for the Advancement of Science is the largest scientific society in the world, with more than 120 thousand members. Founded on September 20, 1848 (170 years ago) as a non-profit organization, its stated goals, according to Wikipedia, are:

“promoting cooperation among scientists, defending scientific freedom, encouraging scientific responsibility, and supporting scientific education and science outreach for the betterment of all humanity”

The prestige of the AAAS partially comes from the fact that it is the institution that publishes Science, one of the most renowned scientific journals in the world. Since 1980, the AAAS has instituted the conferring of an Award for Scientific Freedom and Responsibility to “scientists, engineers or their organizations, whose exemplary actions have demonstrated scientific freedom and responsibility in challenging circumstances.”

The AAAS website states verbatim:

“The types of actions worthy of this award include acting to protect the public’s health, safety or welfare; focusing public attention on important potential impacts of science and technology on society by their responsible participation in
The very denomination of the prize makes clear that it is not intended to reward relevant findings, research outcomes or conquests in knowledge, but researchers with ethical, courageous and responsible behavior based on social interest. The prize entails extraordinary social recognition; it has an associated amount in cash and a commemorative plaque which is delivered in a solemn ceremony that takes place in Washington DC at the beginning of each year.

(5) The prize corresponding to 2019

On February 4, 2019, the AAAS issued a press release announcing that the award Scientific Freedom and Responsibility was granted to two Sri Lankan scientists: Drs. Sarath Gunatilake (professor of health science at the University of California) and Channa Jayasumana (faculty member of Medicine and Allied Sciences at the Rajarata University of Sri Lanka), whose research on the dangers of glyphosate led to the banning of the herbicide in Sri Lanka and other countries.
The reasons for the AAAS award were clear and overwhelming:

“Drs. Sarath Gunatilake and Channa Jayasumana ‘faced death threats and claims of research misconduct while working to determine the cause of a kidney disease epidemic that has claimed tens of thousands of lives in their home country of Sri Lanka and around the world. Ultimately, their advocacy led to the culprit, an herbicide called glyphosate, being banned in several affected countries.’”

Jessica Wyndham, director of the AAAS Scientific Responsibility, Human Rights and Law Program added in the press release:

“‘To right a wrong when significant financial interests are at stake and the power imbalance between industry and individual is at play takes the unique combination of scientific rigor, professional persistence and acceptance of personal risk demonstrated by the two scientists recognized by this year’s award.’”

Indeed, according to the researchers, the consumption of water contaminated with glyphosate can contribute to chronic kidney disease by facilitating the transport of heavy metals such as arsenic and cadmium to the kidneys.
Their paper “Glyphosate, Hard Water and Nephrotoxic Metals: Are They the Culprits Behind the Epidemic of Chronic Kidney Disease of Unknown Etiology in Sri Lanka?” had been published in 2014 and earned worldwide consideration. To date, it has had 25,000 downloads and has received dozens of citations.

Two other papers were published in 2015: “Simultaneous Exposure to Multiple Heavy Metals and Glyphosate May Contribute to Sri Lankan Agricultural Nephropathy” and “Drinking Well Water and Occupational Exposure to Herbicides Is Associated With Chronic Kidney Disease in Padavi-Sri Pura, Sri Lanka.”
With Monsanto and Glyphosate on the Run AAAS Revokes Award to Scientists Whose Studies Led to Ban on Weedkiller in Sri Lanka and Other Countries


(6) An astonishing retraction

Only 48 hours later, on February 6, the AAAS issued another statement retracting the previous decision of honoring scientists Gunatilake and Jayasumana. They argued that they had changed the decision “after concerns were voiced by scientists and members”
The screenshot of the two twits in the AAAS account the first one on February 4th with the announcement of the award and the second one on February 6th with its withdrawal.
No information was provided about those “scientists and members” who had objected, nor why such objections were more trustworthy than the opinions of many other “scientists and members” who thought differently. Much less did they explain how the dissensions invalidated a presumably careful process that over a year the AAAS developed to highlight the distinguished work of these two researchers from Sri Lanka.

The next day, Jayasumana received an email from Jessica Wyndham informing him of the revocation, and removal of the original press release. The director of the Program wrote:

“As discussed over the phone earlier today, following the announcement of the Scientific Freedom and Responsibility Award yesterday, AAAS has received concerns from scientists and members of the organization that we consider need assessment. That means that we will not be able to present to you and Dr. Jayasumana the Award next week as originally planned.”

Wyndham did not respond to calls requesting further comments about the decision.

Wyndham did not respond to calls requesting further comments about the decision.

However the most striking feature of the revocation of the award is that the validity of the hypotheses supported by the findings of the research that underlie this award, simply, is irrelevant for this specific prize.

![Jack Heinemann](https://twitter.com/Jack_Heinemann/status/1093929931413819392?s=20)

Whether or not the link between #glyphosate (or formulation) & kidney disease is right misses the point. A scientific freedom award is given for persecution. If you only give it for proven science, it would be delayed decades & it would only benefit those who persecute.
Jack Heinemann, a geneticist and professor at the University of Canterbury in New Zealand, an expert in dealing with conflicts of interest in research and sustainable agriculture wrote:

“Whether or not the link between glyphosate and kidney disease is right misses the point. A scientific freedom award is given for persecution. If you only give it for proven science, it would be delayed decades and it would only benefit those who persecute”

It is also worth bearing in mind that Gunatilake and Jayasumana, according to the best scientific tradition, had been adequately cautious in offering their own conclusions. In fact, they characterize the link between glyphosate and ERCnT in the following terms:

“A strong association between the consumption of hard water and the occurrence of this special kidney disease has been observed, but the relationship has not been explained consistently. Here, we have hypothesized the association of using glyphosate, the most widely used herbicide in the disease endemic area”

Speaking to Corporate Crime Reporter, Jayasumana said:

“I feel this is an insult, discrimination, humiliation to a scientist live in poor third world country. All my friends and colleagues ask why award is pulled after the announcement. I have no answer. I feel industry is behind this shameless process.”

Weeks after this shameful and unprecedented evolution, the media show lashed out.
The disturbing hypothesis for the sudden uptick in chronic kidney disease

Our kidneys might be vulnerable to the more frequent extreme heat brought on by global warming.

By julia@julia.torontojulia.belluz@voxmedia.com
Feb 15, 2019

Finding the best ways to do good. Made possible by The Rockefeller Foundation.

In its early stages, chronic kidney disease can lurk silently in the body, causing no symptoms at all. Eventually, as these vital organs fail, the hands and feet start to puff up, and sufferers feel nauseated, achy, and itchy. When the disease reaches its last stage, the kidneys fail and you can die.

Around 2000, health officials noticed that chronic kidney disease was on the rise in Central America. An epidemic seemed to be raging among farmworkers who toiled in sugarcane fields on the Pacific Coast in El Salvador and Costa Rica — one of the hottest areas in the region. To date, more than 20,000 people have died in the epidemic, and thousands of others have had to go on kidney dialysis to survive.

Researchers are now coming together around a hypothesis about what’s driving a little-appreciated epidemic, known as “Mesoamerican nephropathy.”

The main suspect: global warming. It has become a leading hypothesis to explain not just Mesoamerican nephropathy but a similar uptick in chronic kidney disease in India and Southeast Asia. The victims could be called “climate canaries.”


Without the slightest support to sustain it, and openly contradicting reality, the author said that all of us coincide now in that de main cause should be the global warming!
(7) Monsanto’s arm

Monsanto’s ties with the AAAS are neither structural nor lacking in fissures, as the prize award itself reveals, but a large group of personalities unequivocally connects both entities. Some of them are mentioned below.

The former president of AAAS, Nina Fedoroff, has become since she left that position an active supporter of the biotechnology industry. After being a collaborator and advisor to the Bush administration, since 2015, she joined the OFW law firm, which backs up the interests of the agrochemical industry.


Another open critic of the findings of the award-winning researchers was Kevin Folta, a professor at the University of Florida known for his advocacy for genetically modified foods, who intentionally concealed
funds received from Monsanto. In 2014, he hurried to characterize Gunatilake and Jayasumana’s work as follows: “A hypothesis was presented, there were no data, there were no experiments.”

Folta mischievously distorts reality. His claim that “there is no data” in the papers is, quite simply, a brazen lie: there is an enormous amount of data in these articles, which include case-control and geographic studies.
The connection of Folta with Monsanto and his lies of not having received money from that transnational company are well known and have been repeatedly denounced.

Monsanto backs $150m plant science centre

- Colin Macilwain

_Nature_ Volume 394, page 211 (1998) | Download Citation

The US life sciences company **Monsanto** is linking up with a charitable trust to create an independent **$150 million** plant science institute in St Louis, Missouri, that is intended to become an international centre of excellence for interdisciplinary plant research.

Plans for the new centre, strategically placed at the heart of America's agricultural mid-west, are due to be announced on 31 July by former president Jimmy Carter. It will operate as a joint venture between the **Missouri Botanical Garden**, Washington University in St Louis, the University of Missouri at Columbia, and Monsanto.

Although Monsanto will contribute cash, land and tax credits worth over **$80 million**, it says that it will not lay any claim to intellectual property generated at the institute, which is expected to attract research support from government, industry and private foundations.

A search committee to find a director for the institute by the end of the summer is being chaired by **Peter Raven**, director of the Missouri Botanical Garden. “We're talking to some of the best plant scientists in the world,” says Sam Fiorello, an assistant to the president of Monsanto.

[https://www.nature.com/articles/28235](https://www.nature.com/articles/28235)

Another former AAAS president, Peter Raven, has very close ties to Monsanto. Raven is Emeritus Director of the Missouri Botanical Garden, an institution intimately linked to Monsanto to the point that it lodges both the “Monsanto Hall”, and the “Monsanto Center” on whose fourth floor is located the library bearing precisely the name “Peter H. Raven Library”.

Monsanto has been among the most generous benefactors of the **Missouri Botanical Garden** for 40 years. An example of the millions dollars
presents given to Raven’s institution is recognized in the very Monsanto site (https://monsanto.com/news-releases/missouri-botanical-garden-receives-3-million-gift-from-monsanto-company-toward-development-of-a-world-flora-online/)

Not in vain Greenpeace has even said that “The American Association for the Advancement of Science acts as The American Association for the Advancement of Monsanto”

Alison L. Van Eenennaam is another character increasing the payroll of individuals that link AAAS with Monsanto. She is a spokesperson and lobbyist for the agrochemical industry, who worked for Monsanto as a leader in some of its projects, and is now nothing less than the incoming chair of the AAAS Agriculture, Food and Renewable Resources Steering Group.

(8) An inevitable conclusion

In the era of post-truth and “fake news”, the reported events are not surprising. However what happened with the annual award of the AAAS to freedom and scientific responsibility in 2019 goes a little further: not only is it a case of hiding, transfiguring or distorting reality, but an act of
unbridled injustice that sacrifices the honor of a prestigious organization at the altar of unveiled corporate interests.

Luis Carlos Silva Aycaguer is a professor at the National School of Public Health of La Habana and has been linked during some years to research related with the Chronic Kidney Disease Epidemic in El Salvador