

Fundação Oswaldo Cruz
Instituto de Comunicação e Informação Científica e Tecnologia em Saúde
Sistema Nacional de Informações Tóxico-Farmacológicas

CLIPPING INTERNET

Rio de Janeiro – Fevereiro 2018

02/02/2018

<https://noticias.r7.com/rio-de-janeiro/balanco-geral-rj/videos/tres-pessoas-se-intoxicam-a-cada-hora-com-medicamentos-sem-receita-medica-no-brasil-02022018>

Três pessoas se intoxicam a cada hora sem receita médica no Brasil

Muitas pessoas tem o hábito de se automedicar, mas é preciso cuidado ao tomar qualquer tipo de medicamento. Segundo a OMS (Organização Mundial de Saúde), os erros de medicação causam pelo menos uma morte por dia no mundo. No Brasil, a cada hora três brasileiros se intoxicam com remédios, de acordo com o Sinitox (Sistema Nacional de Informações Tóxico-Farmacológicas). A Anvisa também revelou que 50% de todos os medicamentos são incorretamente prescritos e vendidos.

02/02/2018

<http://www.otempo.com.br/interessa/sa%C3%BAdade-e-ci%C3%AAncia/tr%C3%AAs-pessoas-a-cada-hora-t%C3%AAm-intoxica%C3%A7%C3%A3o-por-uso-incorreto-de-rem%C3%A9dios-1.1565253>

Três pessoas a cada hora têm intoxicação por uso incorreto de remédios

Casos correspondem a mais de 33% das ocorrências gerais em todo o país

O número é preocupante: a cada 60 minutos, três pessoas são intoxicadas pelo uso incorreto de remédios no país. Mais de 25 mil casos foram registrados apenas em 2015 e correspondem a mais de 33% das ocorrências de intoxicação em geral, de acordo com o Sistema Nacional de Informações Tóxico-Farmacológicas (Sinitox). Em termos de comparação, por exemplo, os atendimentos por picadas de animais peçonhentos e consumo de produtos químicos representam metade desse valor.

As causas podem ser as mais diversas: utilização, informações, prescrição ou administração inadequadas dos fármacos, bem como a automedicação. “Pode haver erro por parte do profissional de saúde na aplicação, mas a maior parte das situações acontece por causa da automedicação. As pessoas acreditam que consultar os sintomas pela internet ou levar em consideração o que um amigo ou vizinho diz pode ajudar. A intenção é boa, mas o resultado não vai valer a pena”, afirma a farmacêutica Yula Merola, presidente do Conselho Regional de Farmácia de Minas Gerais.

De acordo com Yula, os medicamentos que mais provocam intoxicações costumam ser aqueles livres de prescrição. “São analgésicos, anti-inflamatórios e antialérgicos que estão à mão dos pacientes nas prateleiras das farmácias e não precisam que um médico os receite”, explica.

Por conta disso, as maiores vítimas acometidas são crianças e idosos. “Durante muito tempo, a intoxicação infantil se dava, quase que exclusivamente, quando a criança tomava algum remédio escondido. Atualmente, isso mudou: muitas vezes, são as mães, querendo ajudar os filhos, que repassam fármacos sem qualquer tipo de orientação”, declara.

Quanto aos mais velhos, a farmacêutica esclarece que a falta de controle sobre a ingestão de medicamentos é a maior vilã. “Os idosos tendem a esquecer ou até mesmo confundir aquilo que já foi consumido”, diz.

Yula esclarece quais medidas devem ser tomadas a fim de que qualquer tipo de intoxicação seja evitada dentro de casa. “Diante do aparecimento de qualquer sintoma, dirigir-se o mais rápido possível ao pronto-socorro ou hospital mais próximos. Esse sempre será o caminho mais seguro”, finaliza.

Óbito. Em 2015, 28 pessoas morreram por intoxicação. Já em 2014 esse número foi maior: 47, segundo dados do Sistema Nacional de Informações Tóxico-Farmacológicas (Sinitox).

02/02/2018

<https://www.saudecuriosa.com.br/3-pessoas-a-cada-hora-tem-intoxicacao-por-uso-incorreto-de-remedios/>

3 Pessoas a cada hora têm Intoxicação por Uso Incorreto de Remédios!

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02/02/2018

<http://bestofweb.com.br/post/intoxicacao-consumo-de-remedio/>

A cada hora três pessoas são intoxicadas por tomarem remédio de forma errada

Durante a vida toda nós ouvimos que não devemos nos medicar por conta própria. E, verdade seja dita, praticamente ninguém segue a orientação. Contudo, dados de uma pesquisa do Sistema Nacional de Informações Tóxico-Farmacológicas (Sinitox) traz à tona números alarmantes a respeito do uso de medicação.

O estudo revelou que a cada hora, três pessoas são intoxicadas por usarem remédio de maneira errada. Só em 2015 foram registrados no Brasil 25 mil casos, número que representa 33% dos casos de intoxicação em geral.

Especialistas explicam que diversas causas podem contribuir com o problema. Dentre eles está desde a prescrição incorreta do medicamento e a administração inadequada até a automedicação. “Pode haver erro por parte do profissional de saúde na aplicação, mas a maior parte das situações acontece por causa da automedicação. As pessoas acreditam que consultar os sintomas pela internet ou levar em consideração o que um amigo ou vizinho diz pode ajudar. A intenção é boa, mas o resultado não vai valer a pena”, diz Yula Merola, farmacêutica e presidente do Conselho Regional de Farmácia de Minas Gerais.

E aqueles remédios vistos como “inofensivos” (os que não necessitam de prescrição), como analgésicos e anti-inflamatórios, são os principais ‘culpados’. E as principais vítimas são crianças e idosos. “Durante muito tempo, a intoxicação infantil se dava, quase que exclusivamente, quando a criança tomava algum remédio escondido. Atualmente, isso mudou: muitas vezes, são as mães, querendo ajudar os filhos, que repassam fármacos sem qualquer tipo de orientação”, explica a especialista.

Já no caso dos idosos, Yula diz que o problema está no controle da medicação: “Os idosos tendem a esquecer ou até mesmo confundir aquilo que já foi consumido”.

A orientação da farmacêutica é evitar ao máximo se automedicar. E sempre que houver qualquer problema, o paciente não deve hesitar em procurar auxílio médico.

15/02/2018

<http://jornal.usp.br/atualidades/antiinflamatorios-e-antitermicos-podem-provocar-intoxicacao/>

Anti-inflamatórios e antitérmicos podem provocar intoxicação

Dados divulgados pelo Sinitox (Sistema Nacional de Informações Tóxico-Farmacológicas) revelam que, a cada hora, duas pessoas se intoxicam pelo uso de remédios. A automedicação é a principal causa da maioria desses casos, uma cultura difícil de modificar no País. A população

tem o hábito de pedir indicações de remédios para amigos, vizinhos e até procurar na internet informação não especializada.

O professor Maurício Yonamine, do Departamento de Análises Clínicas e Toxicológicas da Faculdade de Ciências Farmacêuticas da USP e diretor do Laboratório de Análises Toxicológicas, esclarece que um profissional de saúde deve sempre ser consultado antes do uso de qualquer medicamento. Mesmo analgésicos, anti-inflamatórios e antitérmicos de venda livre podem provocar intoxicação.

O Conselho Federal de Farmacêuticos está realizando uma campanha para conscientizar as pessoas do perigo que é a automedicação. Para o professor, crianças e idosos são os mais vulneráveis, mas toda a população pode sofrer com o problema, pois a cultura é muito difícil de combater.

O Jornal da USP, uma parceria do Instituto de Estudos Avançados, Faculdade de Medicina e Rádio USP, busca aprofundar temas nacionais e internacionais de maior repercussão e é veiculado de segunda a sexta-feira, das 7h30 às 9h30, com apresentação de Roxane Ré. Você pode sintonizar a Rádio USP em São Paulo FM 93.7, em Ribeirão Preto FM 107.9, pela internet em www.jornal.usp.br ou pelo aplicativo no celular. Você pode ouvir a entrevista completa no player acima.

27/02/2018

<https://thewire.in/227951/brazils-fundamental-pesticide-law-attack/>

<https://news.mongabay.com/2018/02/brazils-fundamental-pesticide-law-under-attack/>

Brazil's Fundamental Pesticide Law Under Attack

Rampant use of risky pesticides because of ineffective environmental regulation in Brazil has led to major health and environmental consequences.

- In 2008, Brazil became the largest pesticide consumer in the world – the dual result of booming industrial agribusiness and ineffective environmental regulation.
- In 1989, the country established one of the then toughest pesticide laws in the world (7,802/1989), which included the precautionary principle in its pesticide evaluation and registration standards. However, limited staffing and budget has made the law very difficult to implement and enforce.
- With its increasing power after 2000, the bancada ruralista, the agribusiness lobby, has worked to overthrow that law, an effort thwarted to date but more likely to succeed under the Temer administration and the current ruralista-dominated Congress.
- Lax pesticide use regulation and education have major health and environmental consequences. Farmers often use pesticides without proper safety gear, while children are often in the fields when spraying occurs. Some experts blame pesticides partly for Brazil's high cancer rate – cancer is the nation's second leading cause of death.

Pesticides are flourishing on fertile economic ground in Brazil, thanks to the large government subsidies and low taxes granted to the companies manufacturing them, the negligible costs for national registration of active chemical ingredients, and virtually nonexistent pesticide use oversight.

These and other incentives – plus explosive agribusiness growth – resulted in Brazil achieving a dubious record in 2008, when it became the largest pesticide consumer in the world, according to a Kleffmann Group study commissioned by the National Association of Plant Defense (ANDEF), representing Brazil's pesticide manufacturers. (Oddly, a negative press response to the study caused ANDEF to deny its own findings for years.)

Number one or not, the national statistics are eye opening. According to IBAMA, Brazil's environmental protection agency, and other data, chemical pesticide active ingredient sales grew countrywide by 313% between 2000 and 2014, rising from 162,461 tons to 508,566 tonnes. São Paulo, Mato Grosso and Paraná became the major trading states over that period. But even once small pesticide consumers, like Amazonas, Amapá and Acre, saw exponential growth, with use soaring by 1,941%, 942%, and 500%, respectively, in sales per tonne between 2005 and 2012 in these Amazon states.

Pesticide use driven by government policy

Pesticides were first imported to Brazil in the 1960s, but it was in 1975, with creation of the National Development Plan (PND) that commercialization grew significantly. Under the PND, farmers were obliged to purchase pesticides to obtain rural credit.

Consumption gained momentum in the first decade of the 21st century, when the bancada ruralista, Brazil's powerful agribusiness lobby, significantly increased the number of seats it held in Congress, which led to subsidies and tax breaks favorable to pesticide makers.

The explosive growth of pesticide consumption went hand in hand with the increase in agriculture exports. According to data from the Brazilian Institute of Geography and Statistics (IBGE), in 1975 the production of cereals, legumes and oilseeds in the country amounted to just 39.4 million tons. In 2014 that grew to 194.5 million tons of grains grown on 56.7 million hectares (218.2 million square miles), and in 2017 to 240.6 million tons on 61.1 million hectares (235.2 million square miles).

Two major commodities, soybeans and corn – both which require high pesticide use – represented much of that growth. In 2000, the value of all grains produced in Brazil was US\$ 6.5 billion; of this, soybeans and corn accounted for US\$ 4.6 billion. In 2016, the total value of grains rose to US\$ 54.8 billion, of which US\$ 44.9 billion came from soy and corn.

“Brazilian agriculture has been consolidated through the expansion of crops turned to commodities or agrofuels that demand intensive use of pesticides,” concludes a study, Geography of the Use of Agrochemicals in Brazil and Connections with the European Union, by Larissa Mies Bombardi, at the Agrarian Geography Laboratory at the University of São Paulo.

“Brazil consumes about 20% of all pesticides sold commercially worldwide,” that study concludes. “There are [currently] 504 pesticides allowed for use in Brazil, and of these, 30% are banned in the European Union – some more than a decade ago.”

The glyphosate example

Brazil's high pesticide usage has potential consequences for human health and the environment. For example, one of the most consumed herbicides in the country is Monsanto's globally controversial glyphosate which has been linked to numerous health problems, and one of whose inert ingredients has been shown to cause cell death.

A technical opinion requested by the Federal Public Prosecutor's Office and issued in May 2015 by Brazilian researchers Sonia Hess and Rubens Nodari, performed an "extensive review of international scientific literature" regarding glyphosate. Among their conclusions is that the herbicide has an endocrine disrupting effect on human liver cells and, in the concentration of parts per trillion (ppt), induces the proliferation of human cells of breast cancer.

And yet, glyphosate regulation remains lax in Brazil, where the herbicide is allowed in application at up to 500 milligrams per litre. The European Union (EU) limits the maximum amount of glyphosate to 0.1 milligrams per litre, or 5,000 times less. Likewise, with soybean spraying, Brazil allows 200 times greater glyphosate residue; 10 milligrams per kg residue is acceptable in Brazil, against 0.05 milligrams per kg in the EU.

Brazil's fundamental pesticide law under attack

Despite the dominance achieved by industrial agribusiness in Brazil during the 21st Century, and the record high use of chemical pesticides there, the bancadaruralista – in alliance with the pesticide industry and the Ministry of Agriculture, Livestock and Food Supply (MAPA) – desires much more deregulation.

According to experts interviewed for this article, the agribusiness sector has been working steadily for nearly three decades to dismantle legislation currently controlling chemical pesticide registration and use in Brazil.

At the heart of this crusade is an effort to eliminate the country's landmark, foundational pesticide regulatory act (7,802/1989), which reads in part:

Pesticides, their components and the like can only be produced, exported, imported, sold and consumed if previously registered with a federal agency, in accordance with the guidelines and requirements of the federal agencies responsible for the health, environment and agriculture sectors.

According to the law, ANVISA (Brazil's health protection agency), IBAMA, and MAPA are responsible for implementing the pesticide registration process. The two agencies carry out hazard assessments, determining potential harm to humans and the environment; while MAPA analyzes agronomic performance and registers products.

Under the rules, the hazard assessment performed by the two agencies is stringent, with pesticides categorized by intrinsic toxicity. Products must be automatically banned, regardless of dose, if classified as carcinogenic (cancer-causing), teratogenic (harmful to embryo or fetus), capable of producing cellular changes, hormonal disorders or reproductive harm.

"The 1989 law was perhaps the most advanced in the world at the time," Victor Pelaez told Mongabay. He is a professor of economics and coordinator of the Observatory on the Pesticides Industry at the Federal University of Paraná (UFPR). Long before the European

Union instituted similar regulations in 2011, Brazil's law 7,802 "already incorporated the precautionary principle," which many nations, including the U.S. have yet to embrace. "That is, it recognized the tremendous high risk of not controlling excessive hazards to human health."

Unfortunately for Brazil's environment and its people, law 7,802 had a critical flaw. It failed to provide the needed mechanisms and staff for implementation. The legislation never worked properly because of the "impracticability of such [strict] control, given the scarce supervision resources [granted to] the public bodies," Pelaez said.

The slowness of pesticide registration has, as a result, long frustrated the pesticide industry, which wants its products quickly approved, while the lack of regulatory staffing and oversight has frustrated environmentalists wanting careful analysis of pesticides.

The drive to deregulate

Since law 7,802 was passed in 1989, dozens of bills have been introduced in Congress by the ruralists, and pushed by pesticide industry lobbyists, to eliminate its strict regulatory framework. The primary push, unsuccessful so far, has been to remove ANVISA and IBAMA from the chemical pesticide registration process.

Another goal of the ruralists and pesticide makers has been to abolish the nation's current stringent pesticide hazard analysis requirement – a particular scientific method used by the two agencies to evaluate biocide toxicity – and to replace it with a less strict risk assessment requirement.

To appreciate motivations for this proposed change, it is important to understand the vast technical difference between "hazard analysis" and "risk assessment."

Hazard analysis (which in Brazil incorporates the precautionary principle) fully rejects for registration any toxic agents that have been studied extensively and found to possess "significant hazards" of causing disease or doing environmental harm.

Risk assessment, on the other hand, is the probability that a hazard will occur and do harm when a product is used; an evaluation that encompasses much more uncertainty and allows more leeway in pesticide approval. Risk assessments are preferred by the ruralists and the pesticide industry who want more freedom in the selection and application of bio toxins.

Typical of the bills pressed by the ruralists is PLS 526 of 1999, a measure meant to exclude ANVISA and IBAMA from the pesticide registration process. PLS 526 was authored by Blairo Maggi, then known as "The Soy King" for being Brazil's biggest soy grower. Today Maggi is Brazil's influential minister of agriculture.

That bill, however, languished in the Chamber of Deputies and then was rejiggered as PL 6299/2002, which also went nowhere during the Lula and Dilma administrations.

Thwarted by the multi-decade delay, the ruralists last year saw a new chance to move ahead with deregulation, working through the more sympathetic Temer administration. Agribusiness sought a fast track workaround to legislation: MAPA sent a draft of an MP, a Provisional Measure equivalent to a presidential executive order, to the Executive's Chief of Staff for review in March, 2017. As with PL 6299, the MP proposed the exclusion of ANVISA and IBAMA from the pesticides licensing process.

However, the pesticide deregulation MP (which if approved by the president, would take effect immediately), met with widespread criticism in the press, and has since disappeared from view. According to Jacimara Machado, IBAMA's director of environmental quality, the agency kept waiting for the Chief of Staff "to discuss the MP's draft," but nothing happened.

Unfazed, the ruralists are preparing another maneuver for 2018, according to Cleber Folgado, a member of the National Forum and the Bahia Forum Against Pesticides, coordinated by Brazil's State Public Ministry. In September "the bancada ruralista and the Temer government negotiated a new bill draft that would replace PL 6299/2002," Folgado told Mongabay.

The new bill synthesizes 18 measures related to PL 6299, all which advance pesticide deregulation. The new PL would establish an "agricultural governing body" to handle the evaluation and approval of pesticide registration, with that entity's review based not on hazard analysis, but on less stringent risk assessments, and also focused more on pesticide crop effectiveness. ANVISA and IBAMA would have no say in the registration process and likely serve only as enforcers of the body's decisions. In part it reads:

The agriculture governing body will be able to define criteria and establish priority in the analysis of registrations or post-registration claims, based on the need for greater control of agricultural pests.... The health and the environmental agencies will adopt the priorities duly established by the agriculture body.

If the ruralists, Congress, and Maggi's MAPA achieve their goal, the new measure would probably allow an unprecedented number of biocides to be registered and to quickly enter the market, maybe including substances already banned in Brazil.

Under the weaker risk assessment process, for instance, pesticides with known carcinogenic potential could no longer be rejected out of hand; instead, they could be registered with the understanding that they should be used in an established and proper manner to reduce the risk of their effects – even though Brazil lacks the regulatory staff to oversee the use risk reduction process.

The MAPA draft justifies the easing of pesticide regulations in this manner:

In a literal interpretation of the law, the regulator bodies [IBAMA and ANVISA] have understood that it is enough that the product presents those intrinsic [hazardous] characteristics to not be registered, regardless of the levels to which humans are exposed. It would be the same as, by making an analogy, every car was to be forbidden from being produced and marketed by its characteristic of being dangerous, i.e., of causing accidents.

The MAPA draft adds: "Prohibiting the use of a substance without considering the exposure levels does not protect the health of the population more than when it is applied correctly, within the limits set by a thorough risk assessment."

Agriculture Minister Blairo Maggi defended the proposed measure on television last July, stating simply: "What we are trying to do is make bureaucratic processes faster."

A critique of deregulation

UFPR's Pelaez refutes MAPA's and Maggi's deregulation arguments: "In a country without a monitoring structure and communication resources on the intrinsic danger of pesticides, approving them in the name of a risk assessment is a setback and practically a crime."

Palaez notes that Brazil's pesticide registration process is in dire need of funds, and he compares the Brazilian procedure unfavorably with that in the United States: "The US government, as a way of enabling an assessment process compatible with the demands of the regulated sector, charges up to US\$ 630,000 [to pesticide companies] for the registration of a new active [pesticide] ingredient. This [helps] finance the high costs of toxicological analysis of registration applications submitted by manufacturing companies. In Brazil, the maximum amount charged is around US\$ 3,000," so the industry contributes little money to quicken the registration process.

The difference between the two nations doesn't end there. While an American license lasts just 15 years, in Brazil a registration never expires – a potentially dangerous situation because new research may uncover formerly unknown health and environmental hazards. Currently, new study evidence can trigger a pesticide re-evaluation in Brazil, although that reanalysis could take years, as in the case of glyphosate which remains in use, despite recent findings of its harmful effects.

The Ministry of Agriculture did not respond to Mongabay's interview request. ANVISA's communication office, when contacted by Mongabay, responded that they would "not comment on speculations" regarding potential pesticide regulation changes.

IBAMA's Machado said that the agency is not against using risk assessment as a tool, but added it would need time to make such changes: "We need to create a structure, do studies, analyse different scenarios and establish procedures, not to mention staff training. None of this is ready."

Agencies under staffed and under pressure

For years, ANVISA, part of the Ministry of Health, has operated under intense political pressure from the ruralist lobby. In 2012, Luis Claudio Meirelles, then ANVISA's general manager, was dismissed after denouncing irregularities in the approval of pesticides that were under analysis.

The same year, Eduardo Daher of ANDEF, the pesticide industry association, gave an interview to the Getúlio Vargas Foundation in which he attacked the regulatory agency: "ANVISA... tries to manage [everything] from breast prosthesis to... pastry. It plays God. The government is not able to coordinate it; it is politically oriented and ideologically manipulated."

At a congressional hearing, Kátia Abreu, a senator for Tocantins state, a ruralist, and a former minister of Agriculture, denounced the "slowness" of the agency in approving and releasing pesticides for use: "Thousands of Brazilians who earn a minimum wage need to eat food [treated] with pesticides because it is the only way to make food cheaper.... ANVISA plays a backward role for the country, to the detriment of agriculture."

Analysts point out that there is a good reason for ANVISA's "slowness." In 2012, the government provided the agency with just 20 technicians in its pesticide registration area, even though 1,500 products awaited evaluation.

IBAMA isn't any better staffed: the chemical and biological substances analysis department, which evaluates not only pesticides but also dispersants, oil, fuels, and other substances, currently has 37 employees, while 2,000 registration applications are pending.

"Without operational capacity, we take five years, on average, to begin evaluating a product, while the assessment itself takes [on average] five months," said IBAMA's Machado.

"Manufacturers complain about the delay. But while we release an average of ten products per week, 30 new applications enter the agency," over the same period. In comparison, the US Environmental Protection Agency has roughly 850 technicians assigned to evaluation, registration and monitoring of pesticides alone.

In January of 2017, MAPA celebrated an "historic record": 277 new pesticides were registered in 2016 (of which 161 were generic). The previous year 182 licenses were approved, 43 of them generic.

A generic pesticide combines, in addition to its active ingredient, other chemicals for varying purposes, facilitating the absorption of poisons, for example. Importantly, neither hazard analysis nor risk assessment currently evaluates the synergistic effects of pesticides – the interaction of all ingredients, producing a greater effect than each separately.

"Sells like soda"

While MAPA officially advocates for the safe use of highly toxic pesticides, assuring they're applied under controlled conditions – moderating dose, levels of exposure, safety equipment, and more – the reality out in the field is far different, say experts.

Farmers are often unaware of the dangers of the chemicals they use, alone and in combination. "Instead of applying one pesticide at a time, many farmers combine an herbicide, a pesticide, and an acaricide [pesticides that kill members of the arachnid subclass Acari, which includes ticks and mites], for example, and make a single application on crops to save on aerial spraying," said Forum Against Pesticides' Folgado. These "so-called toxic syrups (caldas tóxicas, in Portuguese) increase the toxicity of biocides and [have become] a public health problem in Brazil. They are not evaluated by ANVISA or any other body."

Lacking proper state oversight and training, small scale farmers also often adopt unhealthy practices, as shown in a documentary entitled *The insecure use of pesticides*, by Pedro Abreu, a Ph.D. student in collective health at the Faculty of Medical Sciences of the State University of Campinas, and Herling Alonzo, professor of environmental health and toxicology at the same institution.

One case documented in the film tells of a man who regularly used Monsanto's Roundup on his crops — an herbicide whose active ingredient is glyphosate. The man reportedly applied the poison without any self protection, while wearing shorts and slippers; he died of cancer, though his death can't be directly linked to Roundup.

The film registered other examples of improper use, in which, for example, one farmer had stored pesticides in his family's living space, while another purchased them without an

agronomist's recommendation or instruction. José Reis, a family farmer from Lavras, Minas Gerais, told Abreu: The store "used to ask [for] a letter [of prescription], but not anymore, now [pesticides] sell just like soda."

Emerson Abreu, a young farmer, added: buying pesticides is "the same thing as picking up groceries on a supermarket shelf."

In a recent seminar at Fiocruz Minas Gerais state, a research institution specializing in biological sciences and based in Rio de Janeiro, with branches in nine other states, Eliane Novato, a researcher at the department of biochemistry and immunology at the Federal University of Minas Gerais (UFMG), said that "The impact [of pesticides] on health is often complicated to measure [in the field] because there are several factors that go into the relationship [to] 'exposure-damage.' High concentrations of toxic product for a short time have an immediate [health] effect, but low concentrations for a long time have a late, cumulative effect that is difficult to assess."

She notes that it is not uncommon to find children accompanying their parents into sprayed plantation fields, and yet the risk of regular exposure by children to agricultural pesticides is rarely considered.

And yet, data published by the National System of Toxic-Pharmacological Information (Sinitox), linked to the Ministry of Health and Fiocruz, showed that 25.3% of pesticide poisonings reported between 1999 and 2015 occurred in children nine years old or younger, or 50,969 intoxications out of 201,832 cases. Of the children's subgroup, 160 deaths occurred in the same period.

Sinitox breaks down pesticide poisoning into three subgroups, agricultural pesticides, domestic-use pesticides, veterinary products and rodenticides. In 2015, for example, more than 33% of all pesticide poisonings occurred in children up to nine years old — 2,196 out of 6,591 cases. Of the children's subgroup, 259 cases were caused by agricultural pesticides, 945 by household pesticides (insecticides, gardening products, repellents etc.), 379 by veterinary products and 613 by rodenticides. It's important to realise that the Sinitox numbers are incomplete because they cover primarily acute cases, in just 18 of the 26 Brazilian states.

Sonia Hess, a Federal University of Santa Catarina (UFSC) chemistry professor, told Mongabay that cancer is already the second leading cause of death in Brazil, surpassed only by cardiovascular diseases. The number of deaths has increased 31% since 2000 and totalled 223,400 Brazilians annually by 2015, according to the World Health Organization (WHO). How many of these cases are related to exposure to carcinogenic chemical pesticides is uncertain, though researchers are concerned.

"Unfortunately, there is always a long period between scientific evidence of health harm and the ban of these substances," said Hess. "Remember thalidomide," an approved drug that resulted in severe birth defects. "DDT is banned in more than 40 countries, including Brazil and the U.S.," she added, but recognizing its environmental impacts and outlawing it required years.

“For those who study the subject, there is no question that cancer is an environmental epidemic resulting from exposure to toxic substances present in the water, air, food, cosmetics, [and more]... But the reaction to the problem runs counter to the power of the chemical industry, which controls governments around the world. We will continue to count the sick and the dead until the disaster becomes so evident that some reaction can be successful,” leading to more proactive regulation, Hess concluded.