



**Memo n°19: Juan Ignacio PEREYRA**

**Victim's lawyer of spray**

**Argentina**

**The Hague, October 15<sup>th</sup>-16<sup>th</sup>, 2016**

**CONTACTS :**

[emilie@monsanto-tribunal.org](mailto:emilie@monsanto-tribunal.org)

[witnesses@monsanto-tribunal.org](mailto:witnesses@monsanto-tribunal.org)



# **OFFER OF EVIDENCE TO PROVE THAT THE TRANSNATIONAL COMPANY MONSANTO, IN ITS EFFORTS TO OBTAIN ECONOMIC ADVANTAGES, IS VIOLATING HUMAN RIGHTS IN ARGENTINA**

*Translated from the original Spanish version by Celina Andreassi, Rafaela Gunner, Kristie Robinson, Marc Rogers, Sarah Smith, Daniel Tunnard*

## **For the attention of the International Monsanto Tribunal:**

By virtue of the public hearings to be held on 14 to 16 October 2016 in the city of The Hague, The Netherlands, in the context of the International Monsanto tribunal<sup>1</sup>, we present ourselves as citizens, environmental assemblies, human rights organizations, and university chairs of Argentina, organized as a collective entity—Tribunal of the People for Food Sovereignty—whose main purpose is to gather scientific testimonial evidence that proves the constant and grave violation of human rights that we have been undergoing for decades in Argentina due to the transnational company Monsanto and its directors, who are those who take the business decisions of this transnational corporation.

## **OFFER OF EVIDENCE:**

The evidence offered below proves that Monsanto violates human rights and commits crimes against humanity and ecocide in Argentina:

### **The Tribunal of the People for Food Sovereignty for The Hague 2016 Argentine Chapter**

The Tribunal of the People for Food Sovereignty for The Hague 2016 agrees to jointly write this document to denounce the effects suffered by the citizens of Argentina as a result of the agrobiotechnological productive model based especially on the use of transgenic seeds and agrottoxins, which affects food.

This is a contaminating and extractivist process promoted and carried out by the contaminating industry exerted by agrobusiness transnationals such as Monsanto, Bayer, Dow, BASF, Syngenta, and Dreyfus, producers of agrottoxins and GMOs (genetically modified organisms) alongside their Argentine accomplices both in the private sector and the national state. They are all responsible for using a production system that generates dependence, social exclusion, loss of biodiversity, appropriation of natural lands and property, displacement of small-scale farmers and indigenous peoples. They are also responsible for climate catastrophes, desertification, deforestation, contamination of the soil, air and water, transnationalized economic and productive concentration throughout the

---

1 <http://www.monsanto-tribunale.org/>

food chain, causing in turn an increase in chronic diseases, cancer, leukaemia and other pathologies, as well as an increase in morbimortality due to these causes.

From the fumigated towns, socio-environmental organizations, public universities, self-organized neighbours, assemblies, trade unions, journalists and, particularly, the victims of this productive model, write this document to seek to give testimony of their reality that the State and the mass media unscrupulously ignore, in order to be submitted to this tribunal with the aim that Monsanto should be found guilty of ecocide, ethical crimes and crimes against humanity, that is, crimes against nature, humanity and all life.

## **I. INTRODUCTION TO THE ISSUE**

Argentina has historically been characterized by the trade and production of agricultural products. In recent decades these transactions have intensified on the basis of an agro-export economy, bringing Argentina into the vertiginous international market.<sup>2</sup> This new globalized, dynamic world has led to profound changes in the way of life for populations and the agricultural environment is not excluded from this. Technological advances have also entered the field of play as the monoculture productive model is based on direct sowing of GMOs with tolerance to agrottoxins used in the technological packages in sowing, especially glyphosate, and resistance to biological components of every part of the biomass, which agro-industry considers pests. However, as these are artificial, chemical products and genetically altered organisms, they present a grave danger to the health of people, animals, and the environment in general.

There is an increasing number of studies that show the harmful effects that agrottoxins cause, and which directly associate exposure to these products with damage to the health of living beings and the environment. The green revolution and its new variants are the means through which transnational companies succeed in instilling and spreading the “new” form of production, concentrating industrial stages among the origin, production and consumption. In this way, they can control more easily each and every one of the links in the agro-food chain. “The final strategy of the transnational companies is to attain control of a global farm, to satisfy a global supermarket.”<sup>3</sup>

In this way and as part of neoliberal economic politics, Argentina at present has a monopolized market of transgenic seed production, as well as the preproduction of a production system based on direct sowing of genetically modified organisms (GMOs) and agrottoxins that are in the hands of mostly transnational, chemical, pharmaceutical and seed companies, to which we must add their transport and sale (spending on freight and financial speculation that raises prices.) This reality has generated externalities of major economic, social-environmental and health importance. And in this we are the victims. Companies like

---

2 “Los Plaguicidas en Argentina: La genotoxicidad de los agroquímicos y la falta de prevención penal”. Joaquin Gómez Miralles, Dr. Delia Aiassa et al. 2012 Abeledo Perrot 2:128-139-ISSN 1852-0685.

3 “Las Empresas Transnacionales de Semilla: Su penetración en la Argentina, Eliseo GIAI, Realidad Económica 1984 N° 60/61

Monsanto also seek to get recognition of patent rights on GM seeds, in what is an open act of biopiracy. That is, as well as contaminating the environment and our food, and provoking and gravely affecting biodiversity through genetic erosion, they also seek to appropriate nature and cut off the use and free exchange of seeds among farmers, in order to limit free agricultural activity and criminalize age-old farming practices.

## **II. HEALTH EFFECTS**

We, the current and future victims, the afflicted by malformations, cancer, leukaemia, and various pathologies caused by the use of agrottoxins and transgenic seeds, we who live in fumigated villages and towns, the disadvantaged of the economic model, the weak, the silenced, those sacrificed in the name of progress, those who want to work the land without poisoning it, those who fall seriously ill, those who have lost members of their family. We stand here for ourselves, on behalf of our children, on behalf of the children of fumigated countryside schools and for future generations, on behalf of the children who every day consume GM-derived foods, on behalf of those expelled from their land, and on behalf of future generations.

As a result of the liberation of transgenic seeds resistant to and/or tolerant of the glysohate herbicide and different agrottoxins produced by Monsanto along with other chemical and seed transnationals, authorized by the Argentine government in 1996, 340 million litres of agrottoxins are sprayed on Argentine fields every year, exponentially increasing chronic and acute diseases in the population, such as cancer, leukaemia, malformations, infertility, miscarriages, allergies, dermatitis, etc., as a result of direct or indirect exposure to these. In addition, severe damage has been recorded to all aspects of the environment: surface, aquifer and rain water; soil; atmosphere; flora; and fauna.

It is a perverse fallacy to claim that fumigations with toxic, biocide and GM substances can be controlled and that they are harmless to human and environmental health. This fallacy is based on scientific knowledge maliciously handled by Monsanto, which finances the research that gives a biased assessment of its main agrottoxin—glysohate—as well as the GMOs it disperses, in order to cover up the devastating true effects on human health and the environment. In contrast to these verdicts, respectable scientists have checked the results Monsanto seeks to twist. Simultaneously, Monsanto has deployed an arsenal of defamatory, discrediting acts against independent researchers who have done their duty of objectively reporting the results of their work.

To this effect, we offer scientific proof and victim testimonies to demonstrate what is set forth here. Based on the evidence available we claim and can prove that fumigations with agrottoxins are as uncontrollable as the physico-chemical factors (volatilization, gasification) and environmental factors (temperature humidity, wind, thermal reversion) which influence and elude any possibility of knowing where these poisons end up once they are released into the environment.

This activity as it is proposed at present damages the quality of food—as it contains pesticides and GMOs—violating the right to adequate nutrition. The freedom to work is also violated because the widespread use of agrottoxins and transgenic seeds prevents neighbouring producers from choosing to grow their produce in an environment free of agrottoxins in order to produce healthy food. Likewise, other activities such as apiculture

are dying out because of the productive model of transgenics and agrottoxins, as well as putting at risk the survival of the bees, who are the main pollenizers of crops.

### III. TESTIMONIES

#### III.1 From researchers, scientists, health professionals, and other disciplines

“The technological package that accompanies the transgenic soy model in Argentina stimulates the use on the same territory and in many cases at the same time of more than one agrottoxin.”

“The effects on health can be generated through the inhibition of enzymes, the generation of free radicals, competing at an enzymatic level with metals, at the membrane and neurotransmitter level, acting like connecting exogenous factors, damaging the DNA, among other consequences” (Burger, 2012: 49.)

“In general, agrottoxins act on molecules (enzymes, receptors) that fungi, plants, insects and vertebrates share, from which it is logical that we humans should suffer in our organisms similar damage to that suffered by those species, in coming into contact with them, fundamentally, if we take into account that our species shares a genetic load with others, in different proportions (with plant species up to 40%, with insects and mites up to 60% and with other mammals up to 85%).” (Verzeñassi, 2014, “Agroindustria, salud y soberanía” in *La patria sojera*).

**III.1.a. Dr. María del Carmen Seveso** Intensive care doctor, chief of intensive care service, Hospital Provincial de Presidente Sáez Peña, Chaco Province, Argentina, resides in Roque Sáenz Peña, Chaco Province, Argentina.-

Info. web:

a.-<http://www.pagina12.com.ar/diario/sociedad/subnotas/3-63635-2013-05-20.html>

b.- <http://www.centromandela.com/?p=12273>

c.- <http://www.diariojunio.com.ar/noticia.php?noticia=70211>

**III.1.b Dr. Hugo Gómez Demaio** Chief of Paediatric Surgery Service, Hospital Provincial de Posadas, Misiones province, Argentina.

Info. web:

a- [https://www.youtube.com/watch?v=Al-i9J3\\_bdl](https://www.youtube.com/watch?v=Al-i9J3_bdl)

b- <https://www.youtube.com/watch?v=HboNLd7-gtw>

c.- <http://www.plazademayo.com/2011/10/agroquimicos-la-negacion-de-un-problema/>

**III.1.c Dr. Medardo Ávila Vázquez**, Paediatrician and neonatologist, Coordinator of the “Social Determinants of Health” optional module in the course in Clinical Paediatrics at the Hospital Nacional de Clínicas, Faculty of Medical Sciences, National University of Córdoba, Córdoba province, Argentina. Lives in Córdoba, Argentina.-

Avila Vázquez, M: Nota, C (2010) Report on the 1<sup>st</sup> national Meeting of Doctors from Fumigated Towns. Faculty of Medical Sciences, National University of Córdoba, Medicine I and Paediatrics courses.

Info. web:

- a.- <http://reduas.com.ar/informe-encuentro-medicos-pueblos-fumigados/>
- b.- <https://www.youtube.com/watch?v=OmKaKlitxYA>

**III.1.d. Dr. Damián Verzeñassi.** Lecturer in the Socio-environmental Health course at the National University of Rosario, Faculty of Medical Sciences. Sanitary Camps.

Verzeñassi, D, (2015) Rethinking Health from the Ecosystems, Faculty of Medical Sciences, National University of Rosario.

Info. web:

- a.- <https://www.youtube.com/watch?v=i8HSqb3ZeGA>
- b.- <https://www.youtube.com/watch?v=y-9VtCzEMyA>
- c.- <http://www.analisisdigital.com.ar/noticias.php?ed=1&di=0&no=227531>
- d.- <http://www.unr.edu.ar/noticia/4646/agrotoxicos-apreciaciones-tras-fallo-historico-en-arequito>

**III.1.e Dr. Darío Roque Gianfelici.** Rural doctor, general practitioner, specialist in geriatrics, Córdoba 278, Cerrito, 3122 Paraná, Entre Ríos, Argentina.

- Gianfelici, D. (2004). *Soy, Health and People, Argentina*. Available online.

<https://observatoriodelglifosato.wordpress.com/2009/10/23/la-soja-la-salud-y-la-gente-libro-del-dr-dario-gianfelici/>

- Gianfelici, D. (2009) The impact of the soy monoculture and agrochemicals on health. In Fumigated Towns, Report on the issue of the use of pesticides in the main soy provinces in Argentina—Rural Reflection Group. Available Online.

[http://www.rapaluruaguay.org/agrotoxicos/Prensa/Pueblos\\_Fumigados\\_GRR.pdf](http://www.rapaluruaguay.org/agrotoxicos/Prensa/Pueblos_Fumigados_GRR.pdf)

<https://www.youtube.com/watch?v=0iPZQW0IyYE>

**III.1.f. Dr. Jorge Herce** paediatrician in Los Toldos, province of Buenos Aires, Argentina.

<http://www.cadenanueve.com/2014/09/13/los-toldos-se-moviliza-por-el-uso-irracional-de-agrotoxicos-y-cultivos-transgenicos/>

**III.1.g Dr. Raúl Horacio Lucero.** Head of Institute of Molecular Biology of the UNNE, Resistencia, Chaco, Argentina.

-Lucero, R. (2014) Agrochemicals and Health CIN Journal #55 Available Online at <http://www.cin.edu.ar/revista-55-agroquimicos-y-salud/>

Dr. Raúl Horacio Lucero and the difficulties in researching the effects of fumigations in Argentina. Available Anred.

<http://www.anred.org/spip.php?article8484>

<https://www.youtube.com/watch?v=8CLAX6XIRgY>

<https://www.youtube.com/watch?v=MLwtKRWLOho>

<https://www.youtube.com/watch?v=aHlOmD1s3gs>

**III.1.h Mercedes Méndez.** Nurse at Hospital Garran.

Videos with lectures, talks, research and testimonies, referring to the effects/damage caused by the extractive model, especially the agroindustrial model with the widespread use of toxic poisons.

<https://www.youtube.com/user/Meche0864>

*Una aguja en un sojal* ('A Needle in a Soystack') — Production of 39 TV programmes (Channel 5 in Cañuelas) tackling the issue of soyification, agrobusiness and agrottoxins.

[https://www.youtube.com/watch?v=exl\\_RbkYN4s](https://www.youtube.com/watch?v=exl_RbkYN4s)

### **III.1.i Dr. Andrés Carrasco** Doctor in Molecular Biology

-Carrasco AE. Is Glyphosate part of a eugenics model? [Editorial]. *Salud Colectiva*. 2011;7(2):129-133.

-Andrés E. Carrasco, Norma E. Sánchez, Liliana E. Tamagno (2012) Agricultural model and socio-environmental impact in Argentina: monoculture and agrobusiness. Faculty of Agrarian and Forestry Sciences. Association of Universities Montevideo Group (AUGM). Monograph Series: Society and Environment: Reflections for a new Latin America. Available Online.

<http://sedici.unlp.edu.ar/handle/10915/24722>

Very important: <https://www.youtube.com/watch?v=pGg4RGK9tRk>

<https://www.youtube.com/watch?v=z2EI9NliNt4>

[https://www.youtube.com/watch?v=roC\\_yhmEYSs](https://www.youtube.com/watch?v=roC_yhmEYSs)

<https://www.youtube.com/watch?v=Sis38oLpOoo>

### **III.1.j María Ester Lasta** Biochemist at the University of Mar del Plata. Bad Blood Campaign Available Online

[http://www.andaragencia.org/download/Documentos/\\_campania\\_mala\\_sangre\\_resultados.pdf](http://www.andaragencia.org/download/Documentos/_campania_mala_sangre_resultados.pdf)

Info web:

Productive commitment to an environment without agrottoxins

[http://www.rionegro.com.ar/region/apuesta-productiva-por-el-medioambiente-sin-a-EQRN\\_7638904](http://www.rionegro.com.ar/region/apuesta-productiva-por-el-medioambiente-sin-a-EQRN_7638904)

<http://bios.org.ar/reporte-de-resultados-mala-sangre-2/>

**III.1.k Dr. Delia Aiassa**, Doctor in Biology, Department of Natural Sciences. FCEFQyN – National University of Río Cuarto (UNRC), Argentina, MP1177, Laboratory GeMa —Genetics and Environmental Mutagenesis—Department of Natural Sciences, Faculty of Exact Sciences, national University of Río Cuarto, (UNRC), Argentina.

-Bernardi, Natalí; Gentile, Natalia; Mañas, Fernando; Méndez, Álvaro; Gorla, Nora; & Aiassa, Delia. (2015). Evaluation of the level of damage to genetic material in children in the province of Córdoba exposed to pesticides. *Argentine Paediatrics Archives*. 113(2), 6-11.

Info. web:

<http://www.sap.org.ar/docs/publicaciones/archivosarg/2015/v113n2a06.pdf>

<http://www.pagina12.com.ar/diario/sociedad/3-256890-2014-10-06.html>

<https://www.youtube.com/watch?v=3CvAHwM7SNw>

[https://www.youtube.com/watch?v=Q\\_nkatfGeH0](https://www.youtube.com/watch?v=Q_nkatfGeH0)

[http://www.scielo.org.ar/scielo.php?script=sci\\_arttext&pid=S0325-00752015000200009](http://www.scielo.org.ar/scielo.php?script=sci_arttext&pid=S0325-00752015000200009)

<http://www.lavoz.com.ar/ciudadanos/unrc-detectan-dano-genetico-en-ninos-expuestos-plaguicidas>

**III.1. Dr. Rafael Lajmanovich:** National Scientific and Technical Research Council (CONICET), Ecotoxicology Chair – Faculty of Biochemistry and Biological Sciences (FBCB) . National University of the Littoral (UNL)



-Report on glyphosate toxicity National University of the Littoral (2010) Available Online.

[http://www.unl.edu.ar/articles/view/informe\\_sobre\\_la\\_toxicidad\\_del\\_glifosato#.V9HchJh97IV](http://www.unl.edu.ar/articles/view/informe_sobre_la_toxicidad_del_glifosato#.V9HchJh97IV)  
[http://www.conicet.gov.ar/new\\_scp/detalle.php?id=30038&datos\\_academicos=yes](http://www.conicet.gov.ar/new_scp/detalle.php?id=30038&datos_academicos=yes)  
[http://anfibios-ecotox-conser.blogspot.com.ar/2013/10/area-de-estudio\\_22.html](http://anfibios-ecotox-conser.blogspot.com.ar/2013/10/area-de-estudio_22.html)  
[https://www.researchgate.net/profile/Rafael\\_Lajmanovich/publications](https://www.researchgate.net/profile/Rafael_Lajmanovich/publications)  
<http://anfibios-ecotox-conser.blogspot.com.ar/>  
<https://www.youtube.com/watch?v=VUniVPMPNsA>  
<https://www.youtube.com/watch?v=6o5BYn3W7Lw>

**III.1.m Damián Marino:** CONICET researcher. Study into environmental contamination arising from agricultural activities in the Pampas region.

<https://www.youtube.com/watch?v=kjUCExWmlly>  
<https://www.youtube.com/watch?v=tW29VL0U3-4>  
[https://www.youtube.com/watch?v=Te\\_MldoLlOs](https://www.youtube.com/watch?v=Te_MldoLlOs)

-Article Faculty of Exact Sciences National University of La Plata. Available online at

[http://www.exactas.unlp.edu.ar/articulo/2015/10/21/encuentran\\_glifosato\\_en\\_algodon\\_gasas\\_hisopos\\_toallitas\\_y\\_tampones](http://www.exactas.unlp.edu.ar/articulo/2015/10/21/encuentran_glifosato_en_algodon_gasas_hisopos_toallitas_y_tampones)

-Marino Damian, Yanina Elorriaga, Virginia Aparicio, Guillermo Natale, Pedro Carriquiriborde. 2012. Screening of pesticide in surface waters of four basins of the Pampas Region of Argentina with different degree of agriculture intensities. Sent to SETAC

**III.1.n Lucas Alonso,** Graduate in chemistry and environmental technology. CONICET Doctoral Scholar.

[http://www.conicet.gov.ar/new\\_scp/detalle.php?id=45844&datos\\_academicos=yes](http://www.conicet.gov.ar/new_scp/detalle.php?id=45844&datos_academicos=yes)  
Levels of glyphosate and atrazine in rainwater in the Pampa region by Lucas Leonel Alonso, Alicia Estela Ronco, Damián José Marino. Environmental Research Centre (CIMA), Faculty of Exact Sciences, UNLP

Info. web:

<http://www.redsustentable.org/niveles-de-glifosato-y-atrazina-en-aguas-de-lluvia-de-la-region-pampeana/>  
[http://www.exactas.unlp.edu.ar/articulo/2015/2/9/lluvia\\_glifosato](http://www.exactas.unlp.edu.ar/articulo/2015/2/9/lluvia_glifosato)  
<http://www.centromandela.com/?p=13058>

**III.1.o Raúl Montenegro** Doctor in biology, president of FUNAM (Foundation for the Defence of the Environment) and head professor of Evolutionary Biology at the National University of Córdoba. FUNAM is an NGO founded in 1982 ([www.funam.org.ar](http://www.funam.org.ar)). It has consultative status in the United Nations Economic and Social Council (ECOSOC). FUNAM has been awarded the United Nations Global 500 Prize.

Info. web:

<http://www.rnma.org.ar/noticias/18-nacionales/2586-raul-montenegro-es-el-primer-juicio-donde-se-asociara-la-aplicacion-de-plaguicidas-con-efectos-sobre-la-salud-humana>

## III.2 JOURNALISTS

**III.2.a Silvana Bujan**, (Member of the NGO BIOS) Mar del Plata, led a campaign to study the presence of glyphosate in the blood of many people and 70% had glyphosate or AMPA in their blood. Bujan then led a campaign to analyse the presence of glyphosate in urine and the result was that 90% of results were positive. She can testify from Argentina.

Info. web:

[http://www.diarioregistrado.com/politica/el-90--de-los-analisis-de-orina-muestra-glifosato-en-el-cuerpo-de-los-estudiados\\_a56c32cbcf73352813b49d014](http://www.diarioregistrado.com/politica/el-90--de-los-analisis-de-orina-muestra-glifosato-en-el-cuerpo-de-los-estudiados_a56c32cbcf73352813b49d014)

<http://www.telam.com.ar/notas/201507/113127-mar-del-plata-la-orina-del-90-por-ciento-de-personas-sometidas-a-un-estudio-contiene-glifosato.html>

**III.2.b Pablo Ernesto Piovano**: Argentine photographer who travelled around rural areas of Entre Ríos, El Chaco and Misiones to take photos of people affected by agrottoxins and [raise awareness of this tragedy affecting Argentina](#).

<https://vimeo.com/127559134>

<http://elfederal.com.ar/nota/revista/27340/el-costo-humano-de-los-agrotoxicos>

**III.2.c Página/12**, communication cooperative La Vaca and radio stations FM Kalewche (Esquel), la Cooperativa La Brújula (Rosario), and Los Ludditas (FM La Tribu).

<http://www.pagina12.com.ar/diario/sociedad/3-150698-2010-08-04.html>

**III.2.d Patricio Eleisegui**. Works in communications media since 2002. Since March 2013, and by special invitation, he is part of the Argentine Journalism Forum (FOPEA). “Poisons” is his first journalistic investigation into the harmful effects of agrochemicals used in Argentina. In his work he covers the case of Fabián Tomasi.

<http://03442.com.ar/2014/01/el-caso-fabian-tomasi-en-un-libro-sobre-los-efectos-nocivos-de-los-agroquimicos/>

**III.2.e Sergio Sciancaglini**. Revista MU, Lavaca (print run of 10,000 copies).

<http://www.lavaca.org/notas/agrotoxicos-en-la-salud-en-los-algodones-y-en-las-escuelas/>

<http://www.lavaca.org/notas/la-republicueta-sojera-radiografia-de-un-modelo-violento/>

<http://www.lavaca.org/notas/biocombustibles-%C2%BFel-tanque-o-la-comida/>

<http://www.lavaca.org/mu/mu-90-garketing/>

### **III.3. THE EXTENT OF THE DAMAGE IN THE TESTIMONY OF SOME OF THE PEOPLE DIRECTLY AFFECTED.**

*I don't understand agrottoxins,<sup>[1]</sup>  
but my body does.<sup>[SEP]</sup>  
(Testimony of a mother in Ituzaingó)<sup>4</sup>*

**III.3.a Sofía Gatica.** DNI 18.488.285, nurse, province of Córdoba, member of the Ituzaingó Neighbourhood Annex Mothers Group – Founding Line (2012 Green Nobel Prize). Argentine environmental activist. A leading figure in the fight against Monsanto and a founder of the Mothers of Ituzaingó group. Sofía Gatica gave birth to a daughter. Three days later, her baby’s kidneys stopped working. The mother decided to find out what caused her baby’s death.

<https://www.youtube.com/watch?v=DkeUL06Usio>  
<https://www.youtube.com/watch?v=eHHS45AJsoI>  
<http://www.pagina12.com.ar/diario/sociedad/3-196270-2012-06-13.html>

**III.3.b Fabián Tomasi.** Describes himself as “the shadow of success”, a former rural labourer who used to drive a fumigation truck, he is permanent living testimony to what agrotoxins can do.

<http://www.telam.com.ar/notas/201505/103615-agrotoxicos-vida-salud-fabian-tomasi.html>  
<https://www.youtube.com/watch?v=d7zSSN9cOw8>  
<https://www.youtube.com/watch?v=xqFd4Pwfa2Q>  
[https://www.youtube.com/watch?v=xEY3JMS4\\_bg](https://www.youtube.com/watch?v=xEY3JMS4_bg)

**III.3.c Mariana Moyano:** lives with her family—husband and 5 children—in a house across from land fumigated with glyphosate, in Rojas, Buenos Aires Province. Milagros Miranda, her youngest daughter is severely ill with blistering and pruritus, asthma, temporary hypogammaglobulin of infancy, hypothyroidism, circulatory deficiencies manifested in lower limbs with swelling and bruising, suspected allergy to cow proteins, recurring otitis, diarrhoea, decreased antibodies due to severe harm to immune system, all of which are non-hereditary. Since she has no health insurance, she is currently receiving care at the local public hospital and at the BJ Bilela Hospital in Rosario, Santa Fe province, Argentina.

**III.3.d Rosana García** (49) lives at Las Heras 376 in Los Toldos, Buenos Aires province. Used to live in front of a soy plantation that was frequently fumigated with glyphosate, which made her severely ill and forced her to move house. She suffered from metabolism alterations and lymph gland complications. Due to the seriousness of her condition, she had to be hospitalized at the Hospital Rodolfo Rossi, La Plata, Buenos Aires province, where she is being treated by Dr. Graciela Klein, MD Haematologist (4<sup>th</sup> Floor, Bone Marrow Transplant Unit).

**III.3.e Maria Liz Robledo** (39) lives at Urquiza 1155, Baigorrita, Buenos Aires province. Her house is next to a warehouse where drums of glyphosate are stored. Her daughter Martina, 2 years 8 months old, was born with oesophagus atresia with tracheoesophageal, a serious malformation for which she required an operation. She is currently under treatment.

**III.3.f Leonardo Oscar Arizmendi:** (35 years old, Agricultural Technician – Beekeeper) lives in Pergamino, Buenos Aires Province. The use of transgenic products RR and BT and of the herbicide glyphosate and other pesticides on a mass scale, brought with

it the desertification of the humid Pampa, as many plants that served as food for bees became increasingly scarce and eventually extinct. *“Today, after 22 years in the [beekeeping] business and with 500 active beehives, I’m suffering from a lack of food for my bees, which brings with it a decrease in production and an increase in costs in order to keep them alive and healthy throughout the year, as I have to give them artificial food to compensate for the malnutrition caused by the current agricultural model. Malnutrition comes with a greater health risk because it makes the bees more likely to get diseases which in many cases end up being lethal.”*

**III.3.g Patricia Rosas: (40 years old)**, lives on 4119 Alfredo Palacios St, in the town of Valentín Alsina, Buenos Aires Province. Her nine-year-old son Emiliano is a victim of agrottoxins. Ten years ago, Patricia lived with her husband in Wilde, Buenos Aires Province. Across the road from their house there was a small square they’d fumigate using glyphosate every year between September and February in order to prevent the appearance of mosquitoes. In July 2006 she fell pregnant and, after having to put up with a number of fumigations, gave birth to Emiliano in March. From the moment he was born, he suffered from different extreme pathologies. Indeed, before turning one he was diagnosed with Severe Atopic Dermatitis, which cost him several visits to the hospital and having to take corticoids. Also, at seven months old he had severe allergic reactions to tomatoes, citruses, spinach, eggplant, beetroot, soy, and its by-products. At age two he was diagnosed with cow milk protein allergy (CMPA), celiac disease and asthma. He suffered from ulcers and severe colon polyps from drinking “Neocate Gold”, a milk imported from the UK for children with CMPA and which, his doctor didn’t know, had soy by-products. Today, Emiliano is alive thanks to a diet based on agroecological products and is undergoing treatment with Dr. Nicolás Loyacono.

**III.3.h: Andrea Kloster:** Juan P. Garrahan Children’s Hospital

[https://www.youtube.com/watch?v=wEFjRI\\_WUtw](https://www.youtube.com/watch?v=wEFjRI_WUtw)

Andrea Kloster (San Salvador) Food Sovereignty Course/UBA

<https://www.youtube.com/watch?v=UkkBAAIKPNY>

**III.3.i: Emanuel Garrido-** Ex Environment Coordinator at Cnel Suarez / Dissertation in the Senate; Bs.As. Coronel Suarez.

[https://www.youtube.com/watch?v=dHM9u1S\\_h0s](https://www.youtube.com/watch?v=dHM9u1S_h0s)

**III.3.j: FUMIGATED SCHOOLS** (Testimonies)

**Sofía Ramírez:** <https://www.youtube.com/watch?v=sQZFFDtQ3Mk>

**Estela Lemes:** <https://www.youtube.com/watch?v=92hnrnpHUU>

**Emanuel Garrido:** <https://www.youtube.com/watch?v=2wWJJ6j59xc>

**Elisa Loffer:**

<https://www.youtube.com/watch?v=KBpDPwlf3A&spfreload=10>

**School no. 11 FUMIGATED teachers and students, San Antonio de Areco:**  
<https://www.youtube.com/watch?v=Iz8XmnYRutk>

**Dr. Roberto Lescano:** talks about fumigated schools:  
[https://www.youtube.com/watch?v=6gup3m\\_LvV0](https://www.youtube.com/watch?v=6gup3m_LvV0)

**Headmistresses from Fumigated Schools:** Ana Zabaloy and Mariela Leiva. Talk at Garrahan Children's Hospital: "Fumigated schools" "Poison at your table and in your medicine cabinet".

<https://www.youtube.com/watch?v=og8RNPdDZs>

Agrotoxins in healthcare, in cotton and in schools.

<http://www.lavaca.org/notas/agrotoxicos-en-la-salud-en-los-algodones-y-en-las-escuelas/>

### **Drawing by fumigated schoolchildren – School in San Antonio de Areco –Buenos Aires Province**



## **IV. RESEARCH AND ARTS**

### **IV.1 Colectivo La Dársena (Almagro, Buenos Aires City)**

[https://www.academia.edu/12191082/bogstat\\_La\\_responsabilidad](https://www.academia.edu/12191082/bogstat_La_responsabilidad)

Azul Blasotto, Ana Bróccoli, Hernán Cardinale, Alejandro Meitín, Eduardo Molinari. Stories from our travels through soy territories and fumigated towns.

### **IV.2 Archivo Caminante / Eduardo Molinari**

[https://www.academia.edu/8922434/Los\\_ni%C3%B1os\\_de\\_la\\_soja\\_2010\\_Eduardo\\_Molinari\\_Archivo\\_Caminante\\_Versi%C3%B3n\\_en\\_espa%C3%B1ol](https://www.academia.edu/8922434/Los_ni%C3%B1os_de_la_soja_2010_Eduardo_Molinari_Archivo_Caminante_Versi%C3%B3n_en_espa%C3%B1ol)

## **V. DOCUMENTARY EVIDENCE**

**V.1.** Pesticide drift risk maps in Ituzaingó Anexo neighbourhood, Córdoba, Argentina. - BONAPARTE, Eugenia Bianca; RUBINI PISANO, María Aimé; VERA, Florencia Cecilia; Fernando Barri; Cecilia Arguello - Environmental Problems Course E-School of Biology - FCEfYN – National University of Córdoba.

Available at:

[http://www.lavoz.com.ar/files/Estudio\\_sobre\\_deriva\\_de\\_agroquimicos\\_en\\_Ituzaingo.pdf](http://www.lavoz.com.ar/files/Estudio_sobre_deriva_de_agroquimicos_en_Ituzaingo.pdf)

**V.2.** Health Secretariat, Córdoba Province, Argentina – Team UPAS 28: “The case of Ituzaingó Anexo neighbourhood, Córdoba, Argentina” in “Population and Society Issues” magazine. Vol. 3, No. 3, 2013, CEPyD.

Available at:

<http://www.cepyd.org.ar/revista/index.php/CPS/article/view/26>

**V.3.** Assessment of DNA damage in children from Córdoba Province exposed to pesticides. GeMA research group – Genetics and Environmental Mutagenesis. Natural Science Department. National University of Río Cuarto. Argentine Paediatrics Files. Vol. 113 no. 2 Buenos Aires, 2015. ISSN 0325-0075

Available at:

[http://www.scielo.org.ar/scielo.php?script=sci\\_arttext&pid=S0325-00752015000200009](http://www.scielo.org.ar/scielo.php?script=sci_arttext&pid=S0325-00752015000200009)

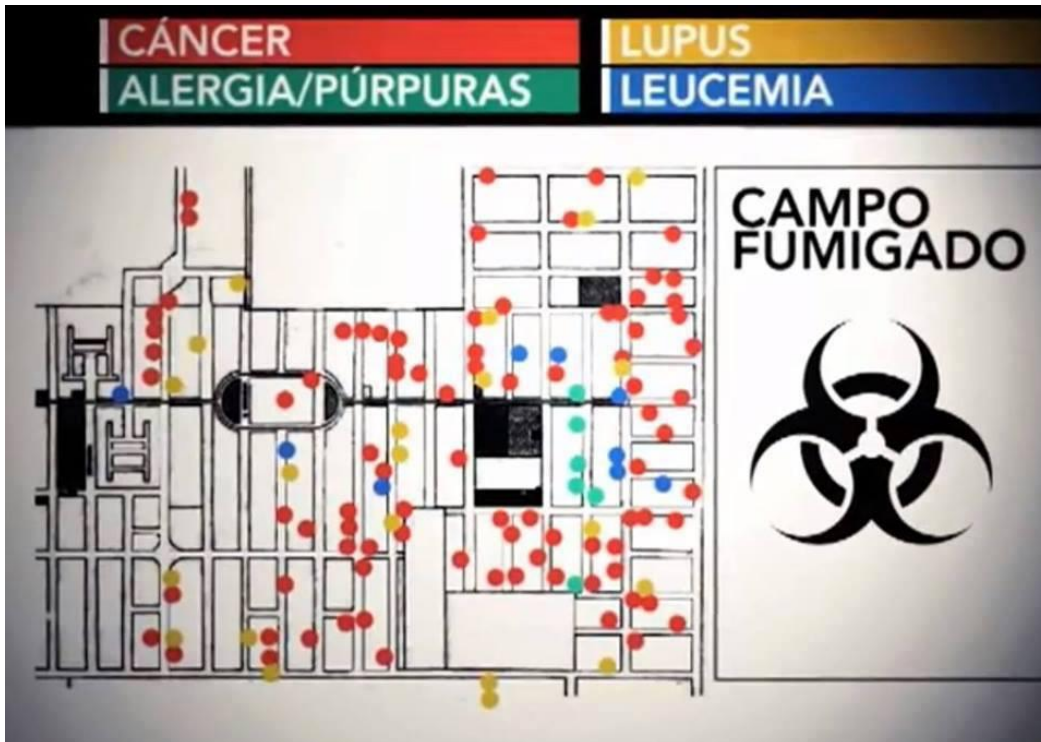
**V.4.** Jorge Kaczewer, 2009. Use of agrottoxins in peri-urban areas and their damaging effect on human health. Glyphosate Observatory in Argentina, 2009.

Available at:

<https://observatoriodelglifosato.wordpress.com/2009/08/16/uso-de-agroquimicos-en-las-fumigaciones-periurbanas-y-su-efecto-nocivo-sobre-la-salud-humana/>

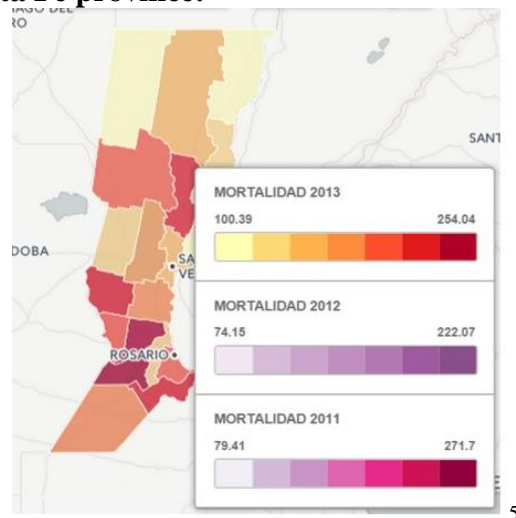
**V.5.** Disease maps produced by the victims.

Georeferencing of cancer, allergies, lupus, and leukaemia cases in Ituzaingó Anexo neighbourhood, Córdoba, 2005.



**V.6. MAPS pollution and cancer in fumigated towns**

**V.6.a. Cancer map, Santa Fe province:**



“In the province, tumours are the second cause of the death behind cardiovascular disease and above breathing diseases and external causes (accidents, murders and suicides). The 11

5 <http://www.rafaela.com/cms/news/ver/50273/1/mapa-del-cancer-en-santa-fe.html>

districts within Santa Fe that have rates higher than the provincial average are located in the centre and south of the province and those with the highest cancer mortality rate are Caseros, Iriondo, and Constitución”.

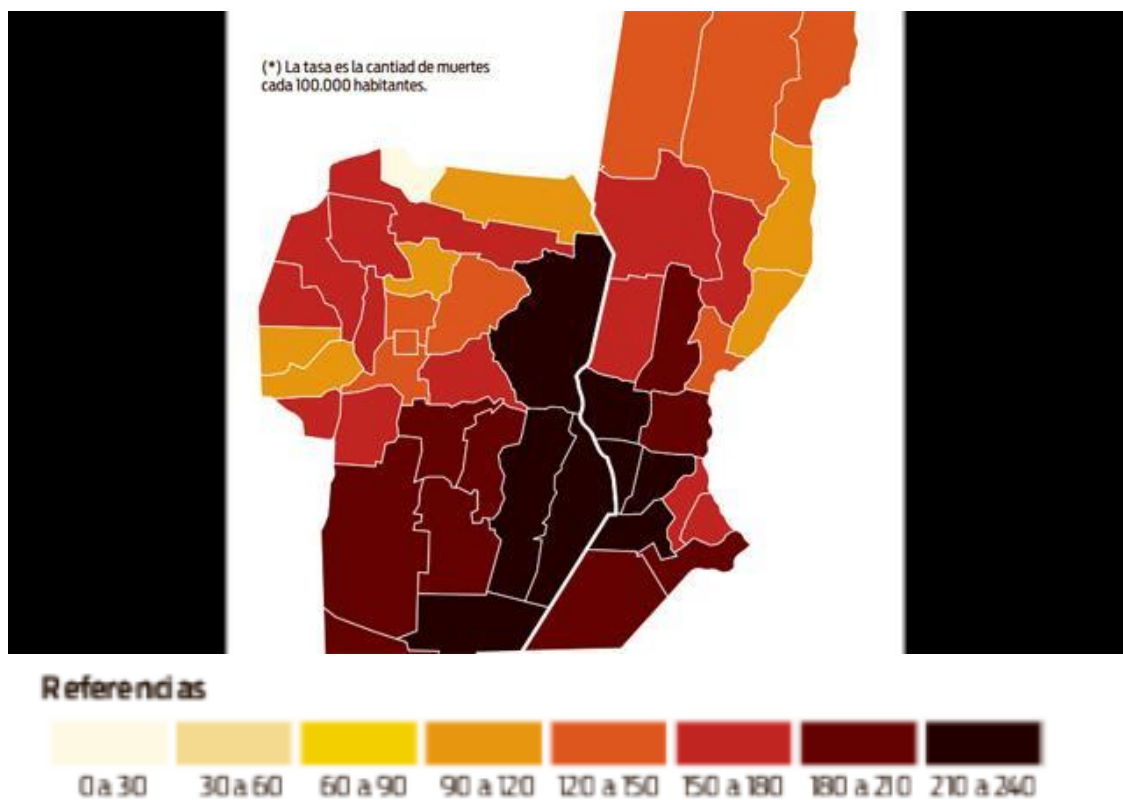
“Whilst some specialists claim that the appearance of tumours is related to the production model that has exposed the population to fumigations with agrottoxins over the last 20 years, the Santa Fe Health Ministry assumes the issue became a health ‘problem’ in the last few decades.”<sup>6</sup>

---

6 <http://www.rafaela.com/cms/news/ver/50273/1/mapa-del-cancer-en-santa-fe.html>

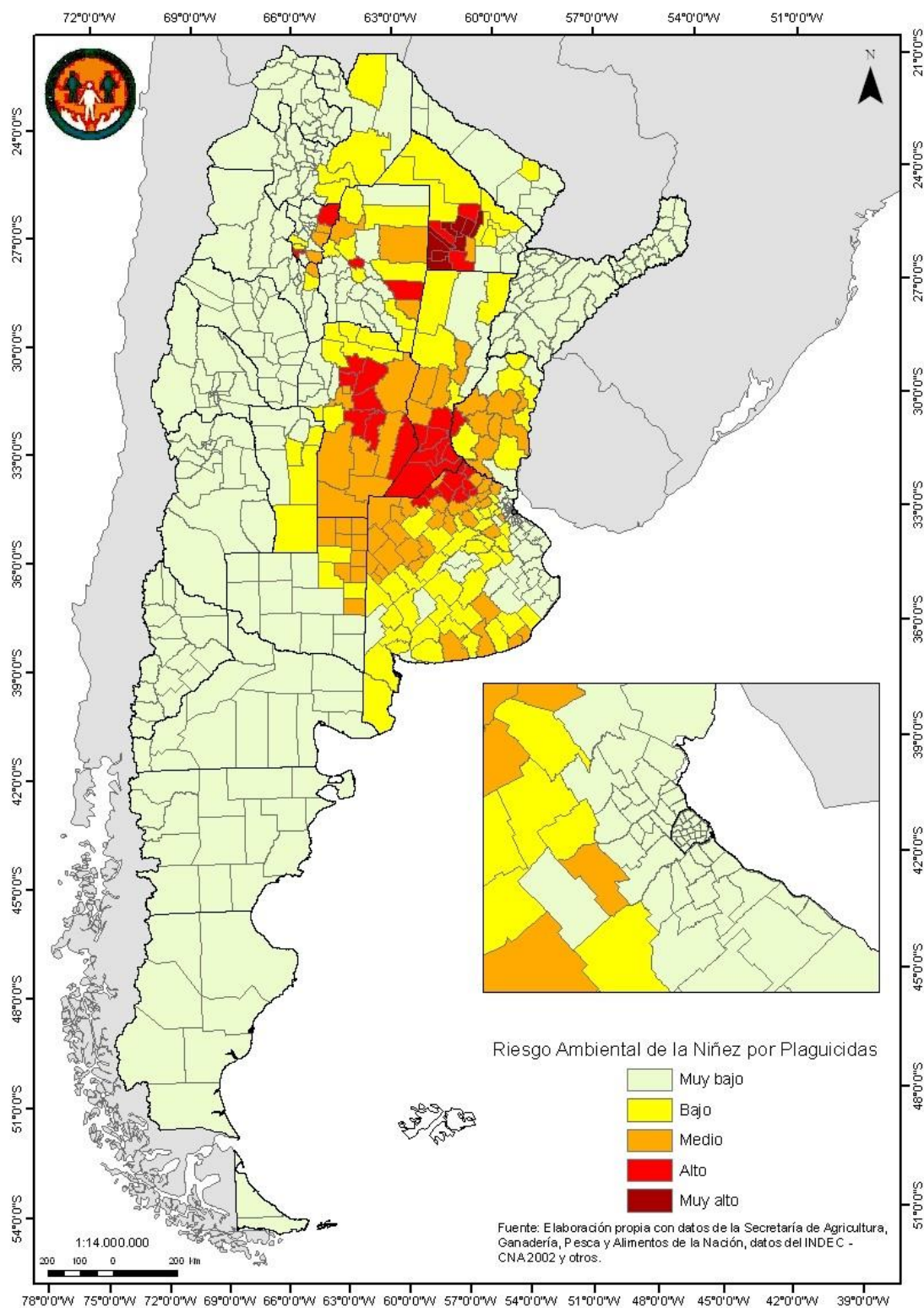


**V.6.b. Cancer mortality rate by district. Córdoba and Santa Fe province, 2011  
(number of deaths / 100,000 people)**



Source: Santa Fe province Health Ministry – Provincial Cancer Registry

**V.6.c Map of Environmental Risk For Children due to Pesticides (produced by the National Ombudsman's Office), 2009**

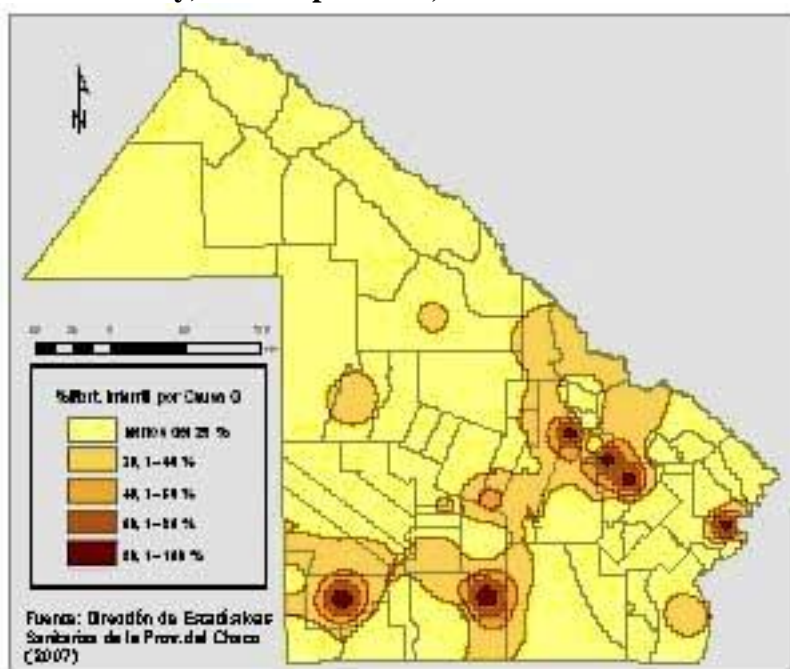


Source: National Ombudsman's Office

“The districts with the highest risk of pesticide pollution –medium, high, and very high- are located in the provinces of Córdoba, in the centre and SE, Santa Fe, in its southern half, and Chaco, also in the south along the border with Santiago del Estero and Santa Fe, and to a lesser extent in the northern districts of Buenos Aires province. A few districts from Entre Ríos, Santiago del Estero, and Tucumán provinces are also included.

Soy is the crop which contributes most to the Pollution by Pesticides Index in the provinces of the humid pampas, while cotton crops are decisive in Chaco province, as the associated agrochemicals are highly toxic, though it should be noted that its presence is decreasing in favour of other crops, such as soy.”<sup>7</sup>

**V.6.d Map of Infant mortality by Q causes (malformations, chromosome anomalies, and deformity). Chaco province, 2009.**



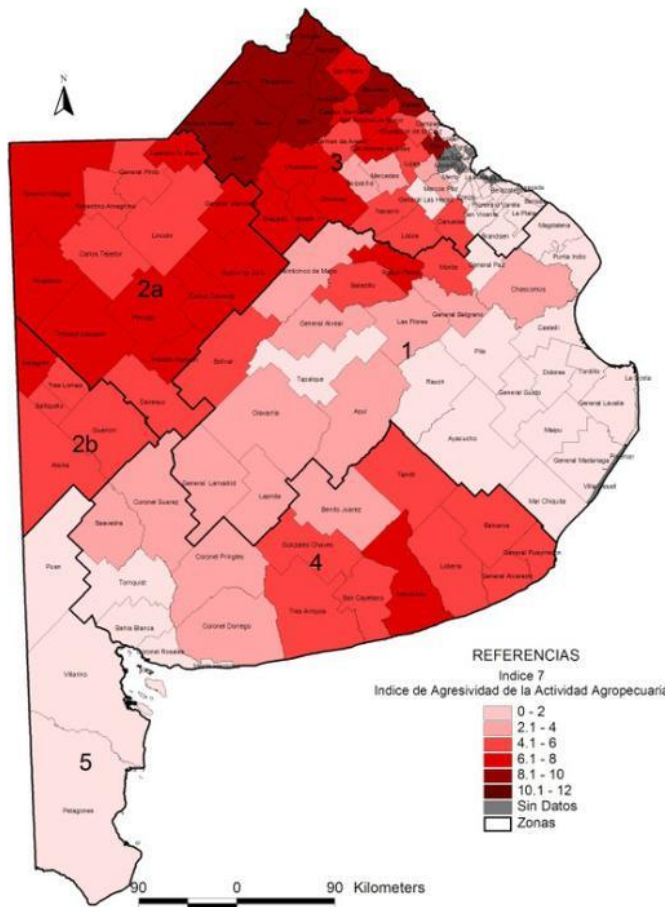
Source: Health Statistics Directorate – Health Ministry – Chaco Province

The highest rates can be found in the soy-growing areas and in La Leonesa, areas with high use of glyphosate and other pesticides.

**V.6.d Map showing the agricultural aggressiveness index in Buenos Aires province, 2012-2013.**

7 Source: National Ombudsman’s Office, Social Rights Directorate, Environment and Sustainable Development Area. Project “The effects of environmental pollution in children, a matter of rights” Joint Programme by the UN System -UNDP, UNICEF, PAHO, ILO-<sup>[1]</sup>March 2009.<sup>[2]</sup>Argentina.

It reflects the potential impact of agrotoxins for each district based on a combination of the activities carried out and the technology used. Darker colours show higher levels of aggressiveness. According to this study, the districts of Rojas, Salto, Junín, Arenales, Colón, Pergamino, Arrecifes, Ramallo, and San Nicolás have the most alarming rates of agricultural aggressiveness.



ational University of La Plata. Survey on the use of agrochemicals in the province of Buenos Aires. Map showing its situation and health impacts.” Available at:

[http://www.agro.unlp.edu.ar/sites/default/files/slides/informe\\_agroquimicos\\_comprimido.pdf](http://www.agro.unlp.edu.ar/sites/default/files/slides/informe_agroquimicos_comprimido.pdf)

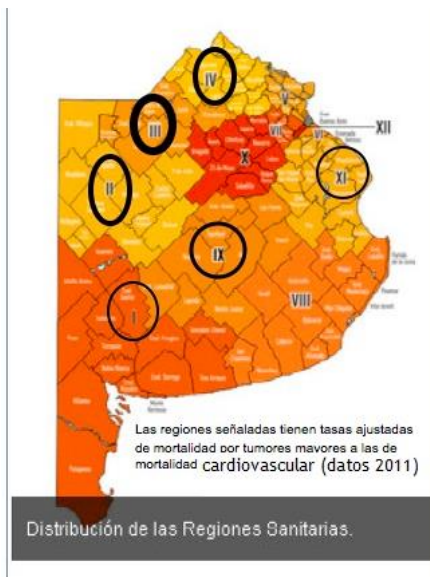
*“The report clearly shows that the problem with agrochemicals does not lie on what is being produced, but how it is being produced. Both the production of export commodities such as soy and orchard produce such as lettuce and tomato are polluting the environment, as shown by the air and soil results. The current production model is intrinsically dangerous because it is based on the application of large amounts of agrochemicals of different toxicity levels, with risks to our health and the environment we live in.*

*The data shows the high health and environmental costs associated with an increase in agricultural production. As the UNLP report shows, the consequences are not far away in*

time, evidence of pollution can be seen today in our water, soil, and food. Within this context, it becomes increasingly hard to justify the intensive use of agrochemicals. The justification of this kind of use in terms of an increase in yield per hectare in fact hides a variety of environmental, health, and social costs.

The problem of agrochemical use exceeds environmental concerns and it is becoming an increasingly urgent public health issue. Denying it will not solve the problem. It is necessary to think urgently about less polluting production alternatives. Otherwise, we will continue to expose the population to irreversible damages, not only in terms of the environment but also of their health.” 8

#### V.6.e Map showing health regions with mortality rates for tumours higher than mortality rates for cardiovascular diseases (in circles)



Source: Environment and Health University Network (REDUAS), 2016. Available at:

<http://reduas.com.ar/ley-procancer-en-provincia-de-buenos-aires/#more-1624>

#### V.7. INTA [NATIONAL INSTITUTE OF AGRICULTURAL TECHNOLOGY] STUDIES: “PESTICIDES ADDED TO THE SOIL AND THEIR DESTINATION IN THE ENVIRONMENT (2015)”

“Unlike atrazine, glyphosate is transported preferably adsorbed to particulate matter and not dissolved in water (Aparicio et al., 2013). In lands in south-east Buenos Aires, glyphosate was present in a range of concentrations between 35 and 1502  $\mu\text{gKg}^{-1}$ , while the

---

8 Source: DRAFT DECLARATION: To declare of provincial interest the Research Project: Survey on the use of agrochemicals in the province of Buenos Aires. Map showing its situation and health impacts. Analysis of the use of agrochemicals linked to agricultural activities in Buenos Aires Province. Available at: <https://www.defensorba.org.ar/pdfs/comunicados/Declaracion-Interes-Provincial-Investigacion-Agroquimicos.pdf>

concentration range of its metabolite, AMPA, was between 299 and 2256  $\mu\text{gKg}^{-1}$ . In 44 superficial watercourses, surrounding these lands, samples were taken in three different occasions (April, August, and September 2012) after the soil samples were taken and both glyphosate and AMPA were detected. The percentages of glyphosate and AMPA detected in the water decreased with time, starting with values of 35% and 33% in April, 1 and 7% in August, and 4% and non-detectable (nd), respectively. The percentage detected in particulate matter was in all cases above 53% for glyphosate and 11% for AMPA. This shows a great affinity of glyphosate and its metabolite with soil and that the surface run-off of the water than transports soil particles reaches superficial watercourses, transporting glyphosate and AMPA. In sediments at the bottom of streams, glyphosate was detected in 66% and AMPA in 89% of the samples (Aparicio et al., 2013). On the other hand, in watercourses in the north of Buenos Aires (Arrecife Stream sub-basin) the presence of glyphosate and AMPA was also registered, having found 0,10-0,70  $\text{mgL}^{-1}$  of glyphosate in surface water and between 0,5-5,0  $\text{mgKg}^{-1}$  in soil and sediments. In the Quequén River basin Lupi et al., (2015) found that the concentrations of glyphosate + AMPA, in shallow soils, 0-5 cm deep, during the herbicide pre-application period, were within the range of 0,093-0,163  $\mu\text{gg}^{-1}$ , 20 times higher than those found in the control soil (0,005  $\mu\text{gg}^{-1}$ ). The authors noted a decrease in the concentration of glyphosate + AMPA as the soil became deeper and with a strong correlation to CO and pH. Pesticides added to the soil and their destination in the environment 50 0 10 20 30 40 50 60 70 80 90 100 Percentage of Detection Particulate Matter Sediment Surface Water Glyphosate AMPA Soil.”<sup>9</sup>

## V.8 Judicial and Ethical Precedents

### V.8.1 The death of children in tomato fields: Lavalle/Corrientes

Two four-year-old children dead and one girl of five who was in a coma and is still receiving treatment are just the tip of the iceberg in Corrientes, where the use of agrottoxins meets the hell that tomato production represents in Lavalle. A judge charged a businessman with manslaughter and exposed the truth that everyone hides and no national or provincial organisation controls. An industry that bases its profits on informal and child labour, and uses lethal poisons, produces 22% of the tomatoes that arrive at the Central Market. SENASA banned the pesticide that killed the boys from Corrientes, but only after 2013, to allow existing stocks to be used up first. The title of the investigation reads: “Aggravated manslaughter and concurrent aggravated injuries”. It is the first trial in Argentina over a death caused by poisoning with agrottoxins. In 2011, Emilio Spataro, a member of the ‘Save the Iberá’ campaign had noted: “Nicolás’ family immediately pointed to the fumigations in the area’s tomato plantation. The children came into contact with poison that had spilled out onto the street when they stepped in some puddles.” <http://www.lavaca.org/mu/mu-60-que-culpa-tiene-el-tomate/>

### V. 8.2 Barrio Ituzaingó, Córdoba

---

9 [http://inta.gob.ar/sites/default/files/inta\\_plaguicidas\\_agregados\\_al\\_suelo\\_2015.pdf](http://inta.gob.ar/sites/default/files/inta_plaguicidas_agregados_al_suelo_2015.pdf); pages 49,50.

Case “Gabrielli, Jorge Alberto and others for alleged infraction of Law 24.501” resolves to:  
II

Unanimously declare FRANCISCO RAFAEL PARRA, criminally responsible for the crime identified by article 55 of the Law on Dangerous Waste – law 25.401 -, continuously, (articles 45 and 55 in contrary to the penal code) – point named First in the Charge – and by majority the co-author of the crime identified by article 55 of the Law on Dangerous Waste – law 25.401 – (point named Second in the Charge), these being concurrent offences (articles 45 and 55 of the Penal Code) and consequently impose the punishment of a three year conditional prison sentence. Declare by majority EDGARDO, JORGE PANCELLO, co-author responsible for the crime identified by article 55 of the Law on Dangerous Waste – law 25.401 – (point named Second in the Charge) and consequently impose the punishment of a three-year conditional prison sentence.

### **V.8.3 Ethical Trials Against Multinationals in 2011, Argentina**

The final ruling of the Ethical Trials against Multinationals held in 2011 in Argentina, where Monsanto and other multinational companies were tried for being the key operators of an extractivist model, for plundering natural assets and stripping the rights of local populations. The trial included accusations from Patagonia, Northwest Argentina, the ‘triple border’, to which were later added, in the hearing in Buenos Aires, the testimonies of social movements from Colombia, Honduras, Brazil, Paraguay, and Mexico over crimes by multinationals in general and Monsanto in particular. There was also public condemnation for the national State and the government that allowed the implementation of such a perverse, neo-colonial system of looting, destruction, and pollution in our people’s territories, for systematically violating all ethics, unalienable human rights and environmental rights, the sovereign territory of the people, the National Constitution, and international laws and treaties.

Website: <http://juicioalastransnacionales.org/2011/11/sentencia-final-del-tribunal-del-juicio-etico-a-las-transnacionales/>

### **IV.9. GLYSOPHATE HERBICIDE. Annex I – attached – SCIENTIFIC PUBLICATIONS THAT PROVE HEALTH AND ENVIRONMENTAL DAMAGE GENERATED BY GLYSOPHATE HERBICIDE. Annex I**

### **V. PETITION**

Let this be a record of our claim.

That the evidence is presented.

The International Tribunal for Monsanto, based on the evidence produced, has released an advisory opinion about the responsibility of Monsanto Corporations and their directors in the violation of human rights, crimes against humanity, and ecocide.

If the petition herein is granted,  
JUSTICE WILL BE DONE

**SIGNED BY:**

Civil Association School of Life; CaLiSA (Open Elective in Food Sovereignty), School of Nutrition, Medicine Faculty, University of Buenos Aires); CaLiSA, Agronomy Faculty (FAUBA); CaLiSA, National University of Luján (UNLu); CaLiSA, National University of La Plata (UNLP); Centre of Protection for Nature (CEPRONAT); La Tribu collective; William Morris cooperative; Autonomous CTA, Province of Buenos Aires; CTA-IDEAL; Ecosur-La verdecita; Paraná NO se Toca; “Pañuelos en Rebeldía” Popular Education Team; International Festival of Environmental Cinema (FINCA); Rojas Environmental Forum; Los Toldos Environmental Forum; Herquen Comunicación; IDEP Salud-ATR Arg’.; Institute of Socio-environmental Health, Medicine Faculty, National University of Rosario (UNR); Socio-environmental Health Module, Medicine Faculty, UNR; Millions against Monsanto; Naturaleza de Derecho; For 1,000 metres free of fumigations in Necochea; Network of Lawyers from Fumigated Towns; Network of Doctors from Fumigated Towns; Network of Municipalities and Communities that Promote Agroecology (RENAMA); Seminar over the Right to Appropriate Food – Law Faculty, UBA; Every 25th until Monsanto leaves.



## **ANNEX I: GLYPHOSATE HERBICIDE- MONSANTO COMPANY.**

### **SCIENTIFIC STUDIES DEMONSTRATE HARMFUL EFFECTS ON HEALTH AND ENVIRONMENT**

#### **A) CARDIOVASCULAR ASPECTS**

##### **A.1.- Lee HL, Kan CD, Tsai CL, Liou MJ, Guo HR.**

Comparative effects of the formulation of glyphosate-surfactant herbicides on hemodynamics in swine.

Clin Toxicol (Phila). Aug 2009; 47(7):651-8.

<http://informahealthcare.com/doi/abs/10.1080/15563650903158862>

This study concludes that the infusion of similar, small doses of both polyoxyethyleneamine (POEA) and isopropylamine (IPAG) affect hemodynamics and cause death in piglets, whereas glyphosate (NaOH base) had no similar effects.

Glyphosate formulations with POEA and IPAG may have cardiovascular effects that have not been sufficiently or properly examined.

##### **A.2- Gress S, Lemoine S, Puddu PE, Séralini GE, Rouet R.**

Cardiotoxic Electrophysiological Effects of Herbicide Roundup® in Rat and Rabbit Ventricular Myocardium In Vitro

Cardiovasc Toxicol. October 2015, Volume 15, Issue 4, pp 324-335.

<http://link.springer.com/article/10.1007/s12012-014-9299-2>

At the highest concentrations tested, there was a high incidence of conduction blocks, and 30-min washout with normal Tyrode solution did not restore excitability. An increased incidence of arrhythmia at different doses of Roundup® was also observed. Conversely, there were no significant electrophysiological effects with the glyphosate alone.

This study demonstrates that Monsanto's Roundup® formulation has cardiotoxic electrophysiological effects, posing a risk of severe and irreparable harm. (2015)

##### **A.3.- Gress S, Lemoine S, Séralini GE, Puddu PE.**

Glyphosate-based herbicides potentially affect cardiovascular system in mammals: review of the literature. Cardiovasc Toxicol. Apr 2015; 15(2):117-26.

<http://www.ncbi.nlm.nih.gov/pubmed/25245870>

This 2015 bibliographic review notes that in glyphosate (G)-based herbicides (GBHs), the glyphosate is mixed with several adjuvants that help it to penetrate the plants' cellular

membranes and its stabilization and liposolubility. Its utilisation is grown with genetically modified organisms engineered to tolerate GBH. It is observed that plasma determination is an essential prerequisite for risk-assessment of GBH intoxication in all hospitals. Only when standard ECGs were performed, at least one abnormal ECG was detected in the large majority of cases after GBH intoxication. QTc prolongation and arrhythmias along with first-degree atrioventricular block were observed after GBH intoxication. Thus, potentially life-threatening arrhythmias might be the cause of death in GBH intoxication.

## **B) DESCRIBED AS AN ENDOCRINE DISRUPTOR**

### **B.1.- Mesnage R., Defarge N., De Vendômois J. Spiroux, G.E. Séralini.**

Potential toxic effects of glyphosate and its commercial formulations below regulatory limits. Food and Chemical Toxicology, 14 August 2015.

<http://www.sciencedirect.com/science/article/pii/S027869151530034X>

This study puts into serious question the Maximum Residue Limits (MRL) for food and water, calling for a new analysis and rethinking based on major studies on the MRL for glyphosate and its formulations. Residue levels in food or water, as well as human exposures, are escalating. This scientific study has reviewed the toxic effects of glyphosate and its coadjuvants (GlyBH) measured below regulatory limits by evaluating the published literature and regulatory reports. It reveals a coherent body of evidence indicating that GlyBH could be toxic below the regulatory lowest observed adverse effect level for chronic toxic effects: teratogenic, tumorigenic, and hepatorenal effects. They could be explained by endocrine disruption and oxidative stress, causing metabolic alterations, depending on dose and exposure time. Some effects were detected in the range of the recommended acceptable daily intake. Toxic effects of commercial formulations can also be explained by GlyBH adjuvants, which have their own toxicity, but also enhance glyphosate toxicity. These challenge the assumption of safety of GlyBH at the levels at which they contaminate food and the environment, albeit these levels may fall below regulatory thresholds. Neurodevelopmental, reproductive, and transgenerational effects of GlyBH must be revisited, since a growing body of knowledge suggests the predominance of endocrine disrupting mechanisms caused by environmentally relevant levels of exposure.

### **B. 2.- Pandey Aparamita., Rudraiah Medhamurthy. (2015)**

Analysis of endocrine disruption effect of Roundup® in adrenal gland of male rats. Toxicology Reports. Volume 2, 2015, Pages 1075-1085.

<http://www.sciencedirect.com/science/article/pii/S221475001530041X>

This study shows that Roundup® may have an endocrine disruption effect. The results suggest that Roundup® may be inhibitory to hypothalamic-pituitary axis leading to reduction in cyclic adenosine monophosphate (cAMP)/PKA pathway, StAR phosphorylation and corticosterone synthesis in the adrenal tissue.

**B.3.- De Liz Oliveira Cavalli VL, Cattani D, Heinz Rieg CE, Pierozan P, L Zanatta, Benedetti Parisotto E, Wilhelm Filho D, Mena Barreto Silva FR, Pessoa-Pureur R, Zamoner A. (2013)**

Roundup® disrupts male reproductive functions by triggering calcium-mediated cell death in rat testis and Sertoli cells.

Free Radic Biol Med. 29 June; 65C :335-346.

<http://www.ncbi.nlm.nih.gov/pubmed/23820267>

This 2013 study indicates that glyphosate has been described as an endocrine disruptor affecting the male reproductive system; however, the molecular basis of its toxicity remains to be clarified. Nevertheless, the study's conclusions allow it to affirm that the toxicity of the Roundup® glyphosate formulation could contribute to Sertoli cell disruption in spermatogenesis that could have an impact on male fertility.

**B4.- Romano R.; Souza P. ; Nunes M. ; Romano M.**

Perinatal exposure to a commercial formulation of glyphosate reduces the mRNA expression and increases the protein content of beta TSH in the pituitary of male offspring.

European Society of Endocrinology. Endocrine summaries (2012) 29 P753.

<http://www.endocrine-abstracts.org/ea/0029/ea0029p753.htm>

The results show for the first time the effects of glyphosate in the pituitary-thyroid axis and demonstrated that the EDC effect of glyphosate is not restricted to the reproductive axis. The study points out that it is not known whether the dose used in this study is in fact the levels of exposure of population to the glyphosate herbicide. However, it was shown that women occupationally exposed to this herbicide have reproductive disorders and may also need to consider in the future the possibility of disturbances in the thyroid function.

**C). MUTAGENICITY**

**1.- Martini CN, Gabrielli M, Villa Mdel C. (2012)**

A commercial formulation of glyphosate inhibits the proliferation and differentiation of adipocytes and induces apoptosis in 3T3-L1 fibroblasts. Toxicology in Vitro. September; 26 (6):1007-1013.

<http://www.ncbi.nlm.nih.gov/pubmed/22546541>

According to our results, the glyphosate herbicide inhibits the proliferation and differentiation of mammalian cells (adipocytes) and induces apoptosis in 3T3-L1

fibroblasts. This suggests cellular damage mediated by the formulated glyphosate and thus is a potential risk factor for human health and the environment.

#### **D) REGARDING ITS CARCINOGEN ASPECTS**

##### **D.1.- Thongprakaisang S, Thiantanawat A, Rangkadilok N, Suriyo T, Satayavivad J. (2013)**

Glyphosate induces the growth of human breast cancer cells through estrogen receptors. Food Chem. Toxicol. September, 59:129-36.

<http://www.ncbi.nlm.nih.gov/pubmed/23756170>

The findings of this recent work from 2013 indicate that relevant low ambient concentrations of glyphosate have estrogenic activity. It points out that glyphosate-based herbicides are widely used for soybean crops, while the results also found that there was an additive oestrogenic effect between glyphosate and genistein, a soybean phytoestrogen. This means that glyphosate can induce the growth of human breast cancer cells through estrogen receptors. Therefore, the researchers indicate that the additive effects of glyphosate pollution in soybean require further animal studies.

##### **D.2.- Eriksson M, Hardell L, Carlberg M, Akerman M. (2008)**

Exposure to pesticides as a risk factor for non-Hodgkin lymphoma (NHL) including the analysis of histopathological subgroups. Int J Cancer. October 1, 123 (7): 1657-1663.

<http://www.ncbi.nlm.nih.gov/pubmed/18623080>

This study confirms that there is an association between exposure to phenoxyacetic acids and NHL, and that the link with glyphosate has thus been considerably strengthened.

##### **D.3.- Belle, R., Le Bouffant, R., Morales, J., Cosson, B., Cormier, P., Mulner-Lorillon, O. (2007)**

Sea urchin embryo, damaged point of cell cycle DNA control and mechanisms that initiate cancer development. J. Soc. Biol. 201, 317-327.

<http://www.ncbi.nlm.nih.gov/pubmed/18157084>

In the field of toxicology and its impact on human health, the sea urchin as an experimental model allows cancer risk to be assessed on the basis of single molecules or combined ones long before any epidemiological evidence becomes available. In this paper, sea urchin embryos were used to test the Roundup pesticide which is employed worldwide and contains glyphosate as the herbicide in the active agent. The research showed that glyphosate has the authority to activate the checkpoint for DNA damage in the first cycle of cell development.

## **E) GENOTOXICITY**

### **E.1.- Roustan A., De Meo M. Sí, M., Giorgio C. Di (2014).**

The Genotoxicity of the mixtures of glyphosate and atrazine and their products which transform the environment before and after Chemosphere photoactivation. Volume 108, August, Pages 93-100.

<http://www.sciencedirect.com/science/article/pii/S004565351400352X>

An essay of in vitro micronucleus in CHO-K1 cells was used to evaluate the cytogenetic photo-inducible toxicity of glyphosate, atrazine, aminomethyl phosphoric acid (AMPA), desethyl-atrazine (DEA), and various mixtures thereof

The results showed that the cytogenetic potential of these pesticides depended mostly on the physical and chemical environment. The mixture made with the four pesticides exhibited the most potent cytogenetic toxicity, which was 20 times higher than the AMPA (the most active compound), and 100 times higher after light irradiation through oxidative stress.

It was established that cytogenetic activities could be observed in the mixtures of pesticides containing glyphosate, atrazine and their products from the degradation of AMPA and DEA. The importance of the effects of this cocktail on environmental matrices was highlighted, noting the limits of the usual experimentation strategies based on individual molecules, to efficiently estimate environmental risks.-

### **E.2.- Manas F., Peralta L., Raviolo J., Ovando HG, Weyers A., Ugnia L., et al., (2009)**

The genotoxicity of glyphosate assessed by the comet assay and cytogenetic testing. Environ. Toxicology. Pharmacol. 28, 37-41.

<http://www.ncbi.nlm.nih.gov/pubmed/21783980>

The comet assay was performed on Hep-2 cells. The level of DNA damage showed a significant increase with glyphosate. In chromosomal aberrations, using human lymphocyte tests, the herbicide showed no significant effect compared to the control group. The micronucleus assay (MNT) was evaluated in mice with three doses. The study concluded that glyphosate was genotoxic in the comet assay on Hep-2 cells and in the MNT test at 400 mg / kg in mice.

### **E.3.- Mañas F, Peralta L, Raviolo J, García Ovando H, Weyers A, Ugnia L, Gonzalez Cid M, Larripa I, Gorla N (2009)**

Genotoxicity of AMPA, the glyphosate environmental metabolite, assessed by the comet assay and cytogenetic testing. Ecotoxicol Environ Saf. Mar, 72 (3):834-7.

<http://www.ncbi.nlm.nih.gov/pubmed/19013644>

This study mentions the undisputed fact that formulations containing glyphosate are among the most widely-used herbicides in the world, and that AMPA is the main product of the environmental degradation of glyphosate. The purpose of this study was to evaluate the in vitro genotoxicity of AMPA using the comet assay on Hep-2 cells after 4 h of incubation and the testing of chromosome aberrations (CAs) in human lymphocytes after 48 hours of exposure.

Potential genotoxicity in vivo was assessed by micronucleus testing in mice. In the comet assay, the level of DNA damage in cells exposed to a 2.5-7.5mM dose showed a significant increase compared with the control group. In human lymphocytes, a statistically significant increase in the effect of clastogenic AMPA at 1.8 mM was found, compared to the control group. In vivo, the micronucleus test yielded statistically significant increases in 200-400mg / kg. The research concludes that AMPA was genotoxic in the three tests held.

**E.4.- Álvarez-Moya Carlos; Reynoso Silva Mónica; Valdez Ramírez Carlos; Gómez Gallardo David; León Sánchez Rafael; Canales Aguirre Alejandro; Feria Velasco Alfredo (2014)**

Comparison of in vivo and in vitro genotoxicity of glyphosate isopropylamine salt in three different organisms. Genet. Mol. Biol. vol.37 no.1 Ribeirão Preto.

[http://www.scielo.br/scielo.php?pid=S1415-47572014000100016&script=sci\\_arttext](http://www.scielo.br/scielo.php?pid=S1415-47572014000100016&script=sci_arttext)

This study mentions that there is much controversy regarding the genotoxicity of glyphosate, with some reports indicating that this compound is not toxic to either fish, birds or mammals. This statement establishes, in the field of environmental law, the strongest evidence of the first supposition for the implementation of the precautionary principle, which is scientific uncertainty.

The comet assay was used to examine the genotoxicity of glyphosate isopropylamine in human lymphocytes, *Oreochromis niloticus* erythrocytes and *Tradescantia stem nuclei* in vitro and in vivo. The cells, nuclei and fish that had and had not been exposed to 5 mM of N-nitrosodiethylamine (NDEA) were used as positive and negative controls, respectively. Significant genetic damage was observed in vivo and in vitro in all cell types and organisms tested. Human lymphocytes showed lower genetic damage in vivo compared to in vitro, possibly due to the efficient metabolism of the herbicide.

In *O. niloticus* erythrocytes, significant genotoxicity was observed, while in vitro, glyphosate was genotoxic in human lymphocytes. These results indicate that glyphosate is genotoxic in cells and organisms studied at 0.7-7  $\mu$  M concentrations.

**F) CELIAC DISEASE**

**F.1.- Samsel Anthony and Seneff Stephanie (2013)**

Glyphosate, routes to modern diseases II: Celiac disease and gluten intolerance. *Interdiscip Toxicology*; Vol..6 (4): 159-184.

[http://nhrighttoknowgmo.org/BreakingNews/Glyphosate\\_II\\_Samsel-Seneff.pdf](http://nhrighttoknowgmo.org/BreakingNews/Glyphosate_II_Samsel-Seneff.pdf)

Glyphosate is known for inhibiting cytochrome enzymes P450. Deficiencies in iron, cobalt, molybdenum, copper, and other rare metals associated with celiac disease can be attributed to the strong capacity of glyphosate to sequester these elements.

Deficiencies in tryptophan, tyrosine, methionine, and selenomethionine associated with the depletion of celiac disease are also exhibited by the action of glyphosate. Patients with celiac disease have a higher risk of non-Hodgkin, which has also been implicated in exposure to glyphosate. Reproductive problems associated with celiac disease, such as infertility, miscarriages, and birth defects, can also be explained by the implication of glyphosate.

Glyphosate residues in wheat and other crops have grown recently due to the growing practice of desiccation of crops just before harvest. It is argued that the practice of “maturing” sugar cane with glyphosate can explain recent surges in renal failure among farm workers in Central America.

The work concludes with a call on governments to reconsider policies regarding the safety of glyphosate residues in food.

## **G) NEUROTOXICITY**

### **G.1.- Hernández-Plata Isela, Giordano Magda, Díaz-Muñoz Mauricio, Rodríguez Verónica M.**

The herbicide glyphosate provokes changes in behaviour and changes in dopamine markers in male Sprague-Dawley rats.

*Neurotoxicology*, Volume 46, January 2015, Pages 79-91.

<http://www.sciencedirect.com/science/article/pii/S0161813X14002162>

The results indicate that chronic exposure to glyphosate lead to hyperactivity accompanied by decreases in the specific binding of D1-DA receptors in NACC, and that acute exposure to glyphosate has evident effects in DA levels in the striatum. Additional experiments are needed to make public the specific objectives of glyphosate in the dopaminergic system, and if glyphosate could be affecting other neurotransmitter systems that intervene in motor control.

### **G.2.- Gallegos CE, Bartos M, Bras C, Gumilar F, Antonelli MC, Minetti A.**

Exposure to a glyphosate-based herbicide during pregnancy and lactation induces neurobehavioural changes in baby rats.

Neurotoxicology. Volume 53, March 2016, Pages 20-28.

<http://www.sciencedirect.com/science/article/pii/S0161813X15300310>

Baby rats exposed to a glyphosate-based herbicide show early onset of cliff avoidance and early opening of the ear canal. A decrease in locomotor activity and in levels of anxiety was also observed in the groups exposed to a herbicide containing glyphosate. The results of this study reveal that early exposure to a glyphosate-based herbicide affects the central nervous system in baby rats probably through the alteration of neurotransmitter mechanisms or systems that regulate locomotor activity and anxiety.

## **H) WATER CONTAMINATION**

**H.1.- Sanchis J, Kantiani L, Llorca M, Rubio F, Ginebreda A, Fraile J, Garrido T, Farré M.**

Determination of glyphosate in groundwater samples using an ultrasensitive immunoassay and confirmation by solid phase on line followed by liquid chromatography coupled to spectrometry of masses in tandem.

Anal Bioanal Chem. Mar. 2012, 402 (7):2335-45.

<http://www.ncbi.nlm.nih.gov/pubmed/22101424>

There are few works related to the analysis of glyphosate in actual groundwater samples and the data presented confirms that, despite having low mobility in soils, glyphosate is able to reach groundwater.

**H. 2.- Aparicio VC, De Gerónimo E , D Marino , Primost J , Carriquiriborde P , Costa JL .**

Environmental destiny of glyphosate and aminomethylphosphonic acid in surface waters and soils of agricultural basins.

Chemosphere 2013 Nov; 93 (9):1866-73.

<http://www.sciencedirect.com/science/article/pii/S0045653513008837>

In this study, it was demonstrated that glyphosate and AMPA are present in agricultural soils. It was also found that in transmission samples presence of glyphosate and AMPA is relatively more common in suspended particles and sediments than in water.

**H. 3.- Marino D.J., Primost J., Elorriaga Y., Ronco A.E., Carriquiriborde P.**

Determination of the environmental levels of glyphosate and AMPA in samples of water, sediments, and soils in the Pampa region, Argentina.



[http://berlin.setac.eu/embed/Berlin/Abstractbook3\\_Part1.pdf](http://berlin.setac.eu/embed/Berlin/Abstractbook3_Part1.pdf)

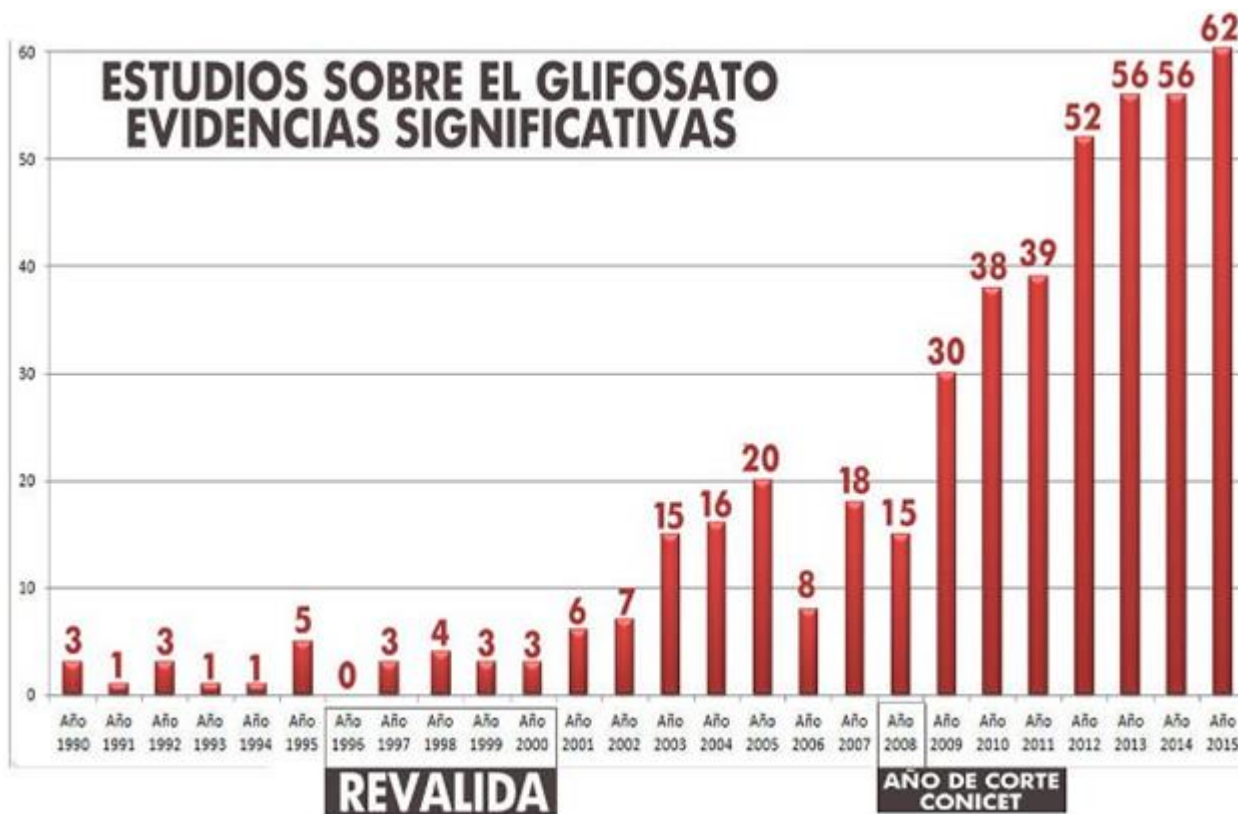


Figure: “Studies on glyphosate significant evidence” , Year 1990 etc., *Revalida*: revalidation; *Año de corte CONICET*: Year of CONICET cut.