**Opposing Views**

**Attachment #9**

**Herbicides Containing Glyphosate**

**should Never be Applied to Areas where**

**Mammals (including humans), Fish, or Birds**

**Might be Present**

**Even Casual Contact may Cause Lethal Diseases**

**Background Information**

Intelligent people fall back to the precautionary Principle when making decisions that might be harmful or dangerous

Here is the essence of the Precautionary Principle

“When an activity raises threats of harm to human health or the environment, precautionary measures should be taken even if some cause and effect relationships are not fully established scientifically.”

The Precautionary Principle is particularly relevant when the science reaches different conclusions.

**Trade Names for herbicides containing glyphosate:** Monsanto discovered and held the patent for glyphosate, and was for many years, the only company that manufactured and sold this herbicides that contained this chemical. The patent expired in 2000, however, and already several other companies are making and selling glyphosate formulations.

Some of the current trade names for glyphosate-containing herbicides include:

Roundup Ultra®, Roundup Pro®, Accord®, Honcho®, Pondmaster®, Protocol®, Rascal®, Expedite®, Ranger®, Bronco®, Campain®, Landmaster®, Aquamaster® and Fallow Master® manufactured by **Monsanto**;

Glyphomax®, Rodeo® and Glypro® manufactured by **Dow AgroSciences**;

Glyphosate herbicide manufactured by **Du Po**nt;

Silhouette® manufactured by **Cenex/Land O’Lakes**;

Rattler® manufactured by **Helena**;

MirageR® manufactured by **Platte**;

JuryR® manufactured by **Riverside/Terra**; and

Touchdown® manufactured by **Zeneca**.

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**The Toxicity Determinations for**

**Herbicides Containing Glyphosate**

**Quoted below are based on**

**Independent Scientific Research**

**Within the last 20 Years.**

**Especially pertinent sections if the quotes below are highlighted in red.**

# Could Roundup® (Glyphosate) Be The Cause of Your Cancer?

Published by Greenberg & Bederman LLC, 2024

https://www.gblawyers.com/roundup-lawsuits/?gad\_source=1&matchtype=p&network=g&device=c&adposition=&keyword=glyphosate%20lawyers&gclid=Cj0KCQjw3tCyBhDBARIsAEY0XNlUAaTgeweHnhZoeAKyQuTd85RC2VkBWWYABnlcQX2MK0qMmMMzQh0aAlhWEALw\_wcB

Excerpts:

Each year, over 70,000 people in the US are diagnosed with Non-Hodgkin's Lymphoma *(NHL)* and its subtype cancers, including...

* B-cell lymphoma
* T-cell lymphoma
* Follicular lymphoma
* Chronic lymphocytic leukemia
* Mantle cell lymphoma
* Diffuse large B-cell lymphoma
* Small lymphocytic lymphoma
* Burkitt Lymphoma
* And more...”

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# Farmworkers, environmentalists urge EPA to pull approval for glyphosate

**By** Clark Mindock

**Published by *Reuters*,** December 13, 2023

**https://www.reuters.com/legal/government/farmworkers-environmentalists-urge-epa-pull-approval-glyphosate-2023-12-13/**

Excerpts:

“Farmworker and environmental advocacy groups on Wednesday asked the U.S. Environmental Protection Agency to immediately suspend and cancel the federal government's approval for the herbicide glyphosate, the active ingredient in Monsanto’s Roundup weed killer.

In a petition filed with the EPA, six groups including the Center for Food Safety and the Farmworker Association of Florida asked for immediate action that would make selling or using the chemical illegal until the EPA thoroughly analyzes glyphosate's health and environmental risks.”

“The groups said the EPA’s continued approval for the chemical violates the Federal Insecticide Fungicide and Rodenticide Act, which requires the EPA to determine with "reasonable certainty" that herbicides will not cause unreasonable harm to people or the environment before they can be approved for use on food.”

“The petition marks the latest effort by the groups to fight the chemical’s use after they successfully challenged an EPA review of the chemical’s risks issued in 2020 that determined glyphosate is “not likely” to cause cancer in humans.”

“The 9th U.S. Circuit Court of Appeals partially struck down the review in 2022 after finding, in part, that the EPA's conclusion the herbicide does not pose an unreasonable cancer risk was not backed by sufficient evidence. The court sent the review back to the agency, but stopped short of vacating the chemical’s existing approvals.”

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**Glyphosate herbicide, the poison from the skies**

By **Chris Lang**

Published in *WRM Bulletin*, August 2005

https://chrislang.org/2005/08/28/glyphosate-herbicide-the-poison-from-the-skies/

Excerpts:

“Glyphosate works by interfering with the metabolism of the plant and a few days after spraying, plants wilt, turn yellow and die. Glyphosate herbicides also contain chemicals which make the herbicide stick to leaves so that the glyphosate can move from the surface of the plant into the plant’s cells.

**After spraying, glyphosate herbicides can remain in soils for long periods. The herbicide can drift onto neighbouring fields, streams or hedges. Roundup kills beneficial insects. It wipes out habitat for birds and animals. Glyphosate causes genetic damage to fish. It is “extremely lethal to amphibians”, according to assistant professor of biology Rick Relyea at the University of Pittsburgh. It is hazardous to earthworms**. Glyphosate reduces nitrogen fixation. Roundup reduces the growth of mycorrhizal fungi. Roundup can increase the spread and severity of plant diseases.

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**Chapter 3. Adverse impacts in the report: Risky Business: Invasive species management on National Forests - A review and summary of needed changes in current plans, policies and programs**

A publication of the Kettle Range Conservation Group, February, 2001

http://kettlerange.org/weeds/Chapter-3.html

Excerpts:

“Case example: Okanogan NF Integrated Weed Management Environmental Assessment (EA) (1997, 1999)

The Okanogan NF Integrated Weed Management EA for 1997 received many comments from the public asking for documentation and analysis of the risks of herbicides to human health and safety, yet all of these concerns for safety were lumped into a single issue on p. 15-16:

“Noxious weed populations can degrade recreational experiences by decreasing the desirability of campsites, replacing native plant populations in developed and dispersed areas and changing the scenery. Herbicide contact could pose risks to human health through skin exposure, inhalation, or ingestion. Some noxious weeds also pose risks to human health.”

The marginalization of human health as mere “issues” rather than actual hazards suggests that there was never any intention of questioning the safety or use of herbicides, except in a very limited fashion, and this is borne out in the analysis section.

Two years later the Okanogan NF prepared a second EA (1999) and through another public comment process, the issues identified through public comments were exactly the same.

**Why are the issues of public health ignored? According to the rationalization given in the EA (Okanogan NF, 1997, p. 17), public comments were addressed in a “higher level document”. In other words, concerns about human health and safety were not considered in the EA. By its limited scope, the agency effectively avoids having to consider issues that it doesn't want to.**

The purpose of an EA is to assess a problem, propose and evaluate alternatives and select the most effective remedy, which should be the least harmful to the environment. In this case, the alternative to use herbicides had been selected prior to doing an analysis. The EA was only used to justify a predetermined decision rather than truly explore alternatives.”

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**Monsanto's Roundup More Deadly to Liver Cells than Glyphosate Alone**

By C Gasniera **Ph.D**., C Dumontb **Ph.D**., N Benachoura **Ph.D**., E Claira, MC Chagnonb **Ph.D**. and GE Séralini **Ph.D**.

Published in *Environmental Health News*, August 18, 2009

http://www.organicconsumers.org/articles/article\_18842.cfm

Excerpts:

“Very low doses of some types of the herbicide Roundup can endocrine disruptor the formulations' toxicity may be tied to their "inactive" ingredients rather than the active weed-killing ingredient glyphosate.

French scientists report that a number of Roundup formulations tested at very dilute concentrations can alter hormone actions and cause human liver cells to die within 24 hours of treatment.

The toxicity of some of the formulations was independent of how much glyphosate - the active herbicide in Roundup - they contained, suggesting it is other "inert" ingredients that may alone - or in combination with each other and/or the weed killer - assault the cells. This study's results are similar to prior studies - as reported in a recent Environmental Health News article - that find human embryo cells are affected more by the Roundup formulations and an inert ingredient than by the active ingredient.

**The levels of Roundup used in this study are similar to what is typically found in food crops or animal feed treated with Roundup. Because of this, it is possible that people, livestock and wildlife may be exposed to levels of the herbicide mix that can damage cells.”**

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# Glyphosate, Roundup and the Failures of Regulatory Assessment

By E Novotny

Published by National Library of Medicine, 2024

https://pubmed.ncbi.nlm.nih.gov/35736929/

Excerpts:

“Many studies have found harm to the environment and to health, making it imperative to regulate the use of Roundup and to ensure that its various formulations pose no danger when used in the long-term. Unfortunately, regulators may only assess the 'active ingredient', glyphosate, and ignore the toxicity of the formulants, which can be far more toxic than the active ingredient. This omission is in violation of a ruling by the Court of Justice of the European Union. **There are close ties between the regulators and the industry they are supposed to regulate**. Objectionable practices include 'revolving doors' between the regulators and the industry, heavy reliance on unpublished papers produced by the industry while dismissing papers published by independent scientists, and strong covert influence on the regulatory process by industry. Although this paper focuses on the European Union (EU), the situation is much the same in the United States.”

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# Exposure to glyphosate-based herbicides and risk for non-Hodgkin lymphoma: A meta-analysis and supporting evidence

By Luoping Zhang **Ph.D.**, Iemaan Rana **Ph.D**, Rachel M. Shaffer **Ph.D**, Emanuela Taioli **Ph.D** and Lianne Sheppard **Ph.D**

Published by Science Direct, 2024

Excerpts:

‘Glyphosate is the most widely used broad-spectrum systemic herbicide in the world. Recent evaluations of the carcinogenic potential of glyphosate-based herbicides (GBHs) by various regional, national, and international agencies have engendered controversy. We investigated whether there was an association between high cumulative exposures to GBHs and increased risk of non-Hodgkin lymphoma (NHL) in humans.

“Using the highest exposure groups when available in each study, we report the overall meta-relative risk (meta-RR) of NHL in GBH-exposed individuals was increased by 41% (meta-RR = 1.41, 95% confidence interval, CI: 1.13–1.75).”

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# Monsanto sold banned chemicals for years despite known health risks, archives reveal

By

Published on *The Guardian*, August 10, 2017

https://www.theguardian.com/environment/2017/aug/09/monsanto-continued-selling-pcbs-for-years-despite-knowing-health-risks-archives-reveal

Excerpts:

“**Monsanto continued to produce and sell toxic industrial chemicals known as PCBs for eight years after learning that they posed hazards to public health** and the environment, according to legal analysis of documents put online in a vast searchable archive.

More than 20,000 internal memos, minuted meetings, letters and other documents have been published in the new archive, many for the first time.

Most were obtained from legal discovery and access to documents requests digitised by [the Poison Papers Project](https://www.poisonpapers.org/), which was launched by the Bioscience Resource Project and the Center for Media and Democracy. Chiron Return contributed some documents to the library.”

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**Clastogenic Effects of Glyphosate in Bone Marrow Cells of Swiss Albino Mice**

By Sahdeo Prasad **Ph.D**, Smita Srivastava **Ph.D**, Madhulika Singh **Ph.D** and Yogeshwer Shukla **Ph.D**

Published by the National Library of Medicine

https://pubmed.ncbi.nlm.nih.gov/20107585/

Excerpts:

“Glyphosate (N-(phosphonomethyl) glycine, C3H8NO5P), a herbicide, used to control unwanted annual and perennial plants all over the world. Nevertheless, occupational and environmental exposure to pesticides can pose a threat to nontarget species including human beings. Therefore, in the present study, genotoxic effects of the herbicide glyphosate were analyzed by measuring chromosomal aberrations (CAs) and micronuclei (MN) in bone marrow cells of Swiss albino mice. A single dose of glyphosate was given intraperitoneally (*i.p*) to the animals at a concentration of 25 and 50 mg/kg b.wt. Animals of positive control group were injected *i.p*. benzo(a)pyrene (100 mg/kg b.wt., once only), whereas, animals of control (vehicle) group were injected *i.p*. dimethyl sulfoxide (0.2 mL). Animals from all the groups were sacrificed at sampling times of 24, 48, and 72 hours and their bone marrow was analyzed for cytogenetic and chromosomal damage. Glyphosate treatment significantly increases CAs and MN induction at both treatments and time compared with the vehicle control (P<.05). **The cytotoxic effects of glyphosate were also evident, as observed by significant decrease in mitotic index (MI). The present results indicate that glyphosate is clastogenic and cytotoxic to mouse bone marrow.”**

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Roundup®highly lethal to amphibians in natural setting, finds University of Pittsburgh researcher

By Reeves, Walter

Published by the University of Pittsburgh News Service, March 31, 2005

http://www.walterreeves.com/tools\_chemicals/article.phtml?cat=22&id=889

Excerpts:

“PITTSBURGH—The herbicide Roundup® is widely used to eradicate weeds. But a study published today by a University of Pittsburgh researcher finds that the chemical may be eradicating much more than that.

Pitt assistant professor of biology Rick Relyea found that Roundup®, the second most commonly applied herbicide in the United States, is "extremely lethal" to amphibians. This field experiment is one of the most extensive studies on the effects of pesticides on nontarget organisms in a natural setting, and the results may provide a key link to global amphibian declines.

In a paper titled "The Impact of Insecticides and Herbicides on the Biodiversity and Productivity of Aquatic Communities," published in the journal Ecological Applications, Relyea examined how a pond's entire community—25 species, including crustaceans, insects, snails, and tadpoles—responded to the addition of the manufacturers' recommended doses of two insecticides—Sevin® (carbaryl) and malathion—and two herbicides—Roundup® (glyphosate) and 2,4-D.

Relyea found that Roundup® caused a 70 percent decline in amphibian biodiversity and an 86 percent decline in the total mass of tadpoles. Leopard frog tadpoles and gray tree frog tadpoles were completely eliminated and wood frog tadpoles and toad tadpoles were nearly eliminated. One species of frog, spring peepers, was unaffected.

"The most shocking insight coming out of this was that Roundup®, something designed to kill plants, was extremely lethal to amphibians," said Relyea, who conducted the research at Pitt's Pymatuning Laboratory of Ecology. "We added Roundup®, and the next day we looked in the tanks and there were dead tadpoles all over the bottom." “

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**Rethinking Roundup**

By Andrew Olsen

Published by Pesticide Action Network North America (PANNA) Update, August 5, 2005

https://www.panna.org/legacy/panups/panna-rethinking-roundup

Excerpts:

“A recent study of Roundup presents new evidence that the glyphosate-based herbicide is far more toxic than the active ingredient alone. The study, published in the June 2005 issue of Environmental Health Perspectives, reports glyphosate toxicity to human placental cells within hours of exposure, at levels ten times lower than those found in agricultural use. The researchers also tested glyphosate and Roundup at lower concentrations for effects on sexual hormones, reporting effects at very low levels. **This suggests that dilution with other ingredients in Roundup may, in fact, facilitate glyphosate's hormonal impacts.”**

“The evidence presented in the recent study is supported by earlier laboratory studies connecting glyphosate with reproductive harm, including damaged DNA in mice and abnormal chromosomes in human blood. **Evidence from epidemiological studies has also linked exposure to the herbicide with increased risk of non-Hodgkin's lymphoma, and laboratory studies have now begun to hone in on the mechanism by which the chemical acts on cell division to cause cancer.** A Canadian study has linked glyphosate exposure in the three months before conception with increased risk for miscarriage and a 2002 study in Minnesota connected glyphosate exposure in farm families with increased incidence of attention deficit disorder.”

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**Differential effects of glyphosate and** **Roundup on human placental cells and aromatase**”

By Richard, Sophie Ph.D., Safa Moslemi Ph.D., Herbert Sipahutar, Nora Benachour and Gilles-Eric Seralini Ph.D

Published in *Environmental Health Perspectives*, June 1, 2005

https://ehp.niehs.nih.gov/doi/full/10.1289/ehp.7728

Excerpts:

“Roundup is a glyphosate-based herbicide used worldwide, including on most genetically modified plants that have been designed to tolerate it. Its residues may thus enter the food chain, and glyphosate is found as a contaminant in rivers. Some agricultural workers using glyphosate have pregnancy problems, but its mechanism of action in mammals is questioned. **Here we show that glyphosate is toxic to human placental JEG3 cells within 18 hr with concentrations lower than those found with agricultural use, and this effect increases with concentration and time or in the presence of Roundup adjuvants**. Surprisingly, Roundup is always more toxic than its active ingredient. We tested the effects of glyphosate and Roundup at lower nontoxic concentrations on aromatase, the enzyme responsible for estrogen synthesis. The glyphosate-based herbicide disrupts aromatase activity and mRNA levels and interacts with the active site of the purified enzyme, but the effects of glyphosate are facilitated by the Roundup formulation in microsomes or in cell culture. **We conclude that endocrine and toxic effects of Roundup, not just glyphosate, can be observed in mammals. We suggest that the presence of Roundup adjuvants enhances glyphosate bioavailability and/or bioaccumulation.” (abstract)**

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**Swedish study shows links between glyphosate and cancer**

By Hartmut Meyer

Published in ***GENET NEWS,*** 23 Jun 1999

http://www.gene.ch/genet/1999/Jun/msg00018.html

Excerpts:

“A recent study by eminent oncologists Dr. Lennart Hardell and Dr. Mikael Eriksson of Sweden (1), has revealed clear links between some of the world's biggest selling herbicides to non-Hodgkin's lymphoma, a form of cancer. "What these scientists unearthed is indicative of the long-term chronic effects of pesticides, even in countries that have the resources. We in the pesticide reform movement have continually stated that if environmental degradation and especially human health impacts are to be minimized, precaution must be the overriding principle. **In this case, where there are serious implications to human health, the precautionary principle must apply**. We have to take precaution against using these dangerous chemicals," comments Sarojeni V. Rengam, Executive Director for the Pesticide Action Network, Asia and the Pacific (PAN-AP).”

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**Literature review of impacts of glyphosate herbicide on amphibians: What risks can the silvicultural use of this herbicide pose for amphibians in B.C.?**

By Govindarajulu, Purnima P. **Ph.D**.

British Columbia Ministry of Environment, Wildlife Report No. R-28, June 2008

http://www.llbc.leg.bc.ca/public/pubdocs/bcdocs/442206/finishdownloaddocument.pdf

Excerpts:

“This review suggests that the silvicultural use of glyphosate needs to be re-evaluated with respect to non-target impacts on amphibians in B.C. In addition, knowledge gaps hinder effective and realistic assessment of these impacts. Glyphosate impacts can be species-specific in amphibians, but acute toxicity values are known for only two native B.C. amphibians (the Wood Frog, *Rana sylvatica*, and the Leopard Frog, *R. pipiens*). The impact of glyphosate herbicides on salamander species and on terrestrial stages of amphibians is not well understood. There is insufficient information on the levels of glyphosate contamination in small ephemeral wetlands, which are favoured habitats of amphibians, and which may be exposed to direct overspraying with herbicide under current use guidelines. Although the surfactant in glyphosate herbicides, POEA, has been identified as potentially the primary ingredient causing toxicity to amphibians, the option of using surfactants of lower toxicity has not been assessed. **These knowledge gaps need to be addressed so that best management practices can be developed to minimize non-target impacts on amphibians from the use of glyphosate herbicides in forestry**.” (Pg. iii)

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**Affidavit submitted by Mae-Wan Ho August 12, 1998 (Greenpeace)**

By Mae-Wan H**o Ph.D**.

Published by *Science in Society*, August 12, 1998

http://www.i-sis.org.uk/greenpeace.php?printing=yes

Excerpts:

“E. Wider ecological concerns of the genetically engineered soya beans

**1. Glyphosate is a broad-spectrum herbicide which will have major impacts on biodiversity (see Greenpeace Report, 1998, and references therein).** It kills all plants indiscriminately. This will destroy wild plants as well as insects, birds, mammals and other animals that depend on the plants for food and shelter. In addition, Roundup (Monsanto's formulation of glyphosate) can be highly toxic to fish. Glyphosate also harms earthworms and many beneficial mycorrhizal fungi and other microorganisms that are involved in nutrient recycling in the soil. It is so generally toxic that researchers are even investigating its potential as an antimicrobial (Roberts *et al,* 1998).

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**Removal of glyphosate from global usage: A Statement by the FIGO (International Federation of Gynecology and Obstetrics) Committee on Reproductive and Developmental Environmental Health**

By Professor Linda Giudice, Committee Chair

Published by International Federation of Gynecology and Obstetrics**,** July 31, 2019

https://www.figo.org/removal-glyphosate-global-usage

Excerpts:

“The FIGO Committee on Reproductive and Developmental Environmental Health advocates for minimising or eliminating exposures to toxics that have the potential to cause harm to reproductive health and human development in particular and to human health more broadly. We strongly endorse Precautionary Principle that "When an activity raises threats of harm to human health or the environment, precautionary measures should be taken even if some cause and effect relationships are not fully established scientifically." **We recommend that glyphosate exposure to populations should end with a full global phase out.”**

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**GMO Dangers: Facts You Need to Know**

By Jonathan Latham, Ph.D.

Published by Colin Campbell Center for Nutrition Studies, August 14, 2015

https://nutritionstudies.org/gmo-dangers-facts-you-need-to-know/

Excerpts:

“Glyphosate has been in the news recently because the World Health Organisation no longer considers it a relatively harmless chemical, but there are other herbicides applied to GMOs which are easily of equal concern. The herbicide Glufosinate (phosphinothricin, made by Bayer) kills plants because it inhibits the plant enzyme glutamine synthetase. This ubiquitous enzyme is found also in fungi, bacteria and animals. Consequently, Glufosinate is toxic to most organisms. **Glufosinate, for good measure, is also a neurotoxin of mammals that doesn’t easily break down in the environment (Lantz et al. 2014). Glufosinate is thus a “herbicide” in name only. Even in normal agricultural its use is hazardous**.”

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# Toxic Effects of Glyphosate on the Nervous System: A Systematic Review

By Carmen Costas-Ferreira, Rafael Durán and Lilian R. F. Faro

Published by Int. J. Mol. Sci. **2022**

https://www.mdpi.com/1422-0067/23/9/4605

Excerpts:

“Glyphosate, a non-selective systemic biocide with broad-spectrum activity, is the most widely used herbicide in the world. It can persist in the environment for days or months, and its intensive and large-scale use can constitute a major environmental and health problem. In this systematic review, we investigate the current state of our knowledge related to the effects of this pesticide on the nervous system of various animal species and humans. The information provided indicates that exposure to glyphosate or its commercial formulations induces several neurotoxic effects. **It has been shown that exposure to this pesticide during the early stages of life can seriously affect normal cell development by deregulating some of the signaling pathways involved in this process, leading to alterations in differentiation, neuronal growth, and myelination**. Glyphosate also seems to exert a significant toxic effect on neurotransmission and to induce oxidative stress, neuroinflammation and mitochondrial dysfunction, processes that lead to neuronal death due to autophagy, necrosis, or apoptosis, as well as the appearance of behavioral and motor disorders. The doses of glyphosate that produce these neurotoxic effects vary widely but are lower than the limits set by regulatory agencies. Although there are important discrepancies between the analyzed findings, it is unequivocal that exposure to glyphosate produces important alterations in the structure and function of the nervous system of humans, rodents, fish, and invertebrates.”

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**Glyphosate Toxicity Alert: How America’s #1 Weedkiller Tricks Your Body Into Absorbing It**

Published by Dr. Axe, July 16, 2020

https://draxe.com/health/glyphosate-toxicity/

Excerpts:

“Glyphosate’s primary use involves killing weeds, but it was first patented as a metal chelator (remover) because it binds to minerals (like calcium) to clear them out of pipes. That’s great for pipes, but not for people who need essential minerals to stay strong and healthy.

**The herbicide also causes a devastating impact on our internal ecosystem. It kills off beneficial bacteria (probiotics) while giving dangerous pathogens a competitive edge**. Research indicates that glyphosate creates and speeds up antibiotic resistance in disease causing bacteria such as salmonella and E. coli.”

Glyphosate poses an enormous health risk because of our constant exposure. And though each instance of contact with glyphosate may seem small, they all add up — especially since this everyday toxin “tricks” your body into storing it, by mimicking other essential nutrients.”

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**Argentina Pressed to Ban Crop Chemical**

By Jude Weber and Hal Weitzman

Published in *The Financial Times*, UK, May 29, 2009

http://www.gene.ch/genet/2009/Jun/msg00006.html

Excerpts:

“**According to Mr. Carrasco’s research, even tiny quantities of glyphosate could cause embryonic malformations in frogs and thus, by extrapolation, may have implications for humans**.”

“I suspect the toxicity classification of glyphosate is too low ... in some cases this can be a powerful poison,” Mr Carrasco told the *Financial Times* in an interview. He says residents near soya-producing areas began reporting problems from 2002, a couple of years after the first big harvests using genetically modified seeds, which were approved for use in Argentina in 1996.

Research by other Argentine scientists and evidence from local campaigners has indicated a high incidence of birth defects and cancers in people living near crop-spraying areas. One study conducted by a doctor, Rodolfo Páramo, in the northern farming province of Santa Fé reported 12 malformations per 250 births, well above the normal rate.”

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**Study: Monsanto's Roundup Herbicide Linked to Cancer, Autism, Parkinson's**

Published by Common Dreams, April 26, 2013

https://www.commondreams.org/news/2013/04/26/study-monsantos-roundup-herbicide-linked-cancer-autism-parkinsons

Excerpts:

“**The active ingredient in Monsanto's Roundup herbicide may be "the most biologically disruptive chemical in our environment," being responsible for a litany of health disorders and diseases including Parkinson’s, cancer and autism, according to a new study**.”

“The researchers point to a potential long list of disorders that glyphosate, in combination with other environmental toxins, could contribute to, including inflammatory bowel disease, obesity, depression, ADHD, autism, Alzheimer’s disease, Parkinson’s disease, ALS, multiple sclerosis, cancer, cachexia, infertility, and developmental malformations.”

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**Roundup Weed Killer Linked to Cancer**

Published by Institute for Responsible Technology

https://www.responsibletechnology.org/gmo-dangers/roundup-weed-killer-linked-to-cancer/

Excerpts:

“The active ingredient in Monsanto's Roundup herbicide may be "the most biologically disruptive chemical in our environment," being responsible for a litany of health disorders and diseases including Parkinson's, cancer and autism, according to a new study.

Looking at the impacts of glyphosate on gut bacteria, Samsel and Seneff found that the herbicide "enhances the damaging effects of other food borne chemical residues and environmental toxins," and is a "textbook example" of "the disruption of homeostasis by environmental toxins."

**The researchers point to a potential long list of disorders that glyphosate, in combination with other environmental toxins, could contribute to, including inflammatory bowel disease, obesity, depression, ADHD, autism, Alzheimer's disease, Parkinson's disease, ALS, multiple sclerosis, cancer, cachexia, infertility, and developmental malformations.**

The herbicide's "Negative impact on the body is insidious and manifests slowly over time as inflammation damages cellular systems throughout the body," they write.”

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**Death by Multiple Poisoning, Glyphosate and Roundup**”

By Ho Mae-Win **Ph.D**. and Brett Cherry

an Institute of Science in Society news release submitted to the USDA, November 2, 2009

https://www.stopogm.net/old/sites/stopogm.net/files/DeathGRoundup.pdf

Excerpts:

“These latest studies confirm a wealth of evidence on the toxicities of glyphosate and Roundup formulations [2] ( [Glyphosate Toxic & Roundup Worse](http://www.i-sis.org.uk/GTARW.php) , SiS 26), and pinpoint the different sites of action, all of which result in cell death. Epidemiological studies have previously linked glyphosate to spontaneous abortions, non-Hodgkin lymphoma, and multiple myeloma. Laboratory studies showed that glyphosate inhibits transcription in sea urchin eggs and delays development. Brief exposures to glyphosate in rats caused liver damage, and adding the surfactant in Roundup had a synergistic effect, causing greater liver damage. **Roundup was also found to be much more lethal to frogs than to weeds, and could have contributed to the global demise of amphibians within the past decades,” (pg 3)**

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**Glyphosate**

Prepared by Dr. Meriel Watts

Published by the Pesticide Action Network Asia and the Pacific, November, 2009

https://www.national-toxic-encephalopathy-foundation.org/roundup.pdf

Excerpts:

**“Some researchers have concluded that glyphosate and its formulations clearly present a risk of carcinogenic, mutagenic, and reproductive effects on human cells.**

Studies have demonstrated that glyphosate and/or Roundup cause genetic damage in human lymphocytes and liver cells; bovine lymphocytes; mouse bone marrow, liver, and kidney cells; fish gill cells and erythrocytes; caiman erythrocytes; tadpoles; sea urchin embryos; fruit flies; root-tip cells of onions; and in Salmonella bacteria. Other studies have shown that it causes oxidative stress, cell-cycle dysfunction, and disruption to RNA transcription, all of which can contribute to carcinogenicity.

**Laboratory studies have shown that very low lev­els of glyphosate, Roundup, POEA, and the me­tabolite AMPA all kill human umbilical, embryonic and placental cells. Roundup can reduce sperm numbers, increase abnormal sperm, retard skel­etal development, and cause deformities in am­phibian embryos**.

Exposure to glyphosate-based herbicides, even at very low doses may result in reproductive and hormonal problems, miscarriages, low birth weights, birth defects, and various cancers—especially haematological cancers such as non-Hodgkin’s lymphoma, and hormonal cancers such as breast cancer.” (pg 2)

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**Why Glyphosate Should Be Banned – A Review of its Hazards to Health and the Environment**

By **Dr.** Mae-Wan Ho

Published by the Permaculture Research Institute, November 1, 2012

https://www.permaculturenews.org/2012/11/01/why-glyphosate-should-be-banned-a-review-of-its-hazards-to-health-and-the-environment/

Excerpts:

“**Epidemiological studies have found links to cancer including non-Hodgkin lymphoma and increased plasma cell proliferation. Cancer rates have risen in glyphosate-use zones in Argentina**. Lab studies found significant increases in interstitial cell tumour incidence in rats as well as skin tumour-promoting activity. Numerous lab studies including those performed by industry showed glyphosate damages DNA of cells in culture as well as in humans living in glyphosate-sprayed regions of Argentina. Non-mammalian studies found defects in cell cycle checkpoints and DNA damage repair machinery. DNA damage is a major prelude to cancers. AMPA, the glyphosate metabolite, also has genotoxic effects.

**Neurotoxicity effects include Parkinsonism have emerged following acute exposure. Exposure to glyphosate resulted in oxidative stress in lab animals and death of neuronal cells, correlating with Parkinsonian pathology**. Acute exposure in fish resulted in acetylcholine esterase (AChE) inhibition. An epidemiological study linked glyphosate -exposure to Attention-Deficit-Hyperactive disorder in children, a disorder associated with AChE inhibition. The original neurotoxicity studies carried out by industry were ruled invalid by the US Environment Protection Agency and urgently need re-examining by independent scientists.”

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**Death by Multiple Poisoning, Glyphosate and Roundup**

By Mae-Wan Ho and Brett Cherry

Published by Institute of Science in Society, November 2, 2009

https://www.stopogm.net/old/sites/stopogm.net/files/DeathGRoundup.pdf

Excerpts:

“**The researchers found that the presence of the other chemical ingredients in Roundup formulations, such as POEA, actually amplified glyphosate's toxic effects**. The toxicities of the Roundup formulations were not proportional to the amount of glyphosate they contained, and are most likely due to POEA and other as yet undisclosed ingredient(s) present in all the formulations. POEA by itself is much more toxic than the Roundup formulations, while AMPA is more toxic than glyphosate.”

“For programmed cell death, the action is quicker. The marker enzymes are activated from 6 h of exposure, with a maximum at 12 h in all cases. HUVEC was 60-160 times more sensitive than the other cell lines; G and R360 were effective at exactly the same concentration, from 50 ppm. The adjuvants do not seem necessary. G alone is 30 percent more potent here than Rs; it acted rapidly at concentrations 500 –1 000 times lower than agricultural use.” (pg 2)

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**Glyphosate**

Published in a *chemicalWATCH* Factsheet, August 2009

http://www.beyondpesticides.org/pesticides/factsheets/Glyphosate.pdf

Excerpts:

“A 2012 study found that Roundup, in sublethal and environmentally relevant concentrations, causes two species of amphibians to change their shape by interfering with the hormones of tadpoles and potentially many other animals. A 2005 study found that Roundup alone is “extremely lethal” to amphibians in concentrations found in the environment. Another study found that *Rana pipiens* tadpoles chronically exposed to environmentally-relevant concentrations of glyphosate formulations, containing POEA, exhibited decreased snout-vent length at metamorphosis, increased time to metamorphosis, tail damage, and gonadal abnormalities. **Glyphosate and its salts, as well as its metabolite AMPA, are also likely to adversely impact the endangered California red-legged frog due to prey and habitat reduction.55**

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**US: Farmers, Others Sue USDA over Monsanto GMO Alfalfa**

By Carey Gillam

Published by *Reuters*, February 17, 2006

https://www.corpwatch.org/article/us-farmers-others-sue-usda-over-monsanto-gmo-alfalfa

Excerpts:

“A coalition of farmers, consumers and environmental activists Thursday sued the U.S. government over its approval of a biotech alfalfa that critics say will spell havoc for farmers and the environment."

**Opening another front in the battle over genetically modified crops, the lawsuit contends that the U.S. Department of Agriculture improperly is allowing Monsanto Co. to sell an herbicide-resistant alfalfa seed while failing to analyze the public health, environmental, and economic consequences of that action**.

"The USDA failed to do a full environmental review when they deregulated this genetically engineered alfalfa," said Will Rastov, an attorney for Center for Food Safety, one of the plaintiffs. "They're going to wreak untold dangers into the environment." “

“Monsanto spokeswoman Mica DeLong said the company had no comment on the issue and referred inquires to USDA. Monsanto received regulatory clearance to begin selling the biotech alfalfa last summer.

**The suit names Secretary of Agriculture Mike Johanns, Animal Plant Health Inspection Service Administrator Ron Dehaven and Environmental Protection Agency administrator Steve Johnson as defendants.**

APHIS spokeswoman Karen Eggert said the agency had no immediate comment. EPA also declined to comment and a spokeswoman for USDA could not be reached immediately.”

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# UW study: Exposure to chemical in Roundup increases risk for cancer

By Jackson Holtz

Published in UW News, Feb. 13, 2019

https://www.washington.edu/news/2019/02/13/uw-study-exposure-to-chemical-in-roundup-increases-risk-for-cancer/#:~:text=By%20examining%20epidemiologic%20studies%20published,the%20evidence%20from%20laboratory%20animals.

Excerpts:

“Exposure to glyphosate — the world’s most widely used, broad-spectrum herbicide and the primary ingredient in the weedkiller Roundup — increases the risk of some cancers by more than 40 percent, according to new research fron the Universityof Washington.

***“*Exposure to glyphosate or MCPA can more than double one’s risk of developing non-Hodgkin lymphoma (NHL), according to new research from the Universityn of Washington.**

NHL is a cancer of the immune system. There are several different types of NHL, which are differentiated by the type of immune cell that is cancerous, the characteristics of the cancerous cell, and different genetic mutations of the cancerous cells. Treatment for NHL varies depending on NHL type, patient age, and other existing medical conditions. The incidence of NHL has been increasing over the past several decades.

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**Scientist Warns of Dire Consequences with Widespread Use”**

The Organic and Non-GMO Report, Posted May 2010

https://www.non-gmoreport.com/articles/may10/consequenceso\_widespread\_glyphosate\_use.php

Excerpts:

“**The widespread use of glyphosate is causing negative impacts on soil and plants as well as possibly animal and human health. These are key findings of Don Huber, emeritus professor of plant pathology, Purdue University**.”

“In a paper published in the European Journal of Agronomy in October 2009, Huber and co-author G.S. Johal, from Purdue's department of botany and plant pathology, state that the widespread use of glyphosate that we see today in agriculture in the United States can "significantly increase the severity of various plant diseases, impair plant defense to pathogens and diseases, and immobilize soil and plant nutrients rendering them unavailable for plant use." Further, the authors state that glyphosate stimulates the growth of fungi and enhances the virulence of pathogens such as Fusarium and "can have serious consequences for sustainable production of a wide range of susceptible crops." The authors warn "ignoring potential non-target detrimental side effects of any chemical, especially used as heavily as glyphosate, may have dire consequences for agriculture such as rendering soils infertile, crops non-productive, and plants less nutritious. To do otherwise might well compromise not only agricultural sustainability, but also the health and well-being of animals and humans." “

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# Pesticides and Amphibians: The Importance of Community Context

# ByRick A. Relya Ph.D., Nancy Schoeppner and Jason T. Hoverman

# *Ecological Applications,* 15(4), July 1, 2005, pp. 1125–1134

# http://www.mindfully.org/Pesticide/2005/Roundup-Amphibians-Community1jul05.htm

Excerpts:

“In contrast to malathion, Roundup had strong direct effects on the tadpoles. Roundup caused a 40% reduction in total tadpole survival and biomass. The impact of Roundup (with POEA [polyethoxylated tallow-amine] surfactant) is consistent with previous laboratory studies in a variety of species. Mann and Bidwell (1999) estimated LC5048h at 3.9 to 15.5 mg active ingredient (AI)/L in four species of Australian tadpoles while Perkins et al. (2000) estimated LC5096h values of 12.4 mg AI/L in the African clawed frog *(Xenopus laevis).* In both studies, it was clear that the high toxicity of Roundup was caused by the POEA surfactant and not from the active ingredient (glyphosate). Lajmanovich et al. (2003) examined the impact of Kleeraway (another formulation of glyphosate that contains the POEA surfactant) on a South American tadpole *(Scinax nasicus)* and found an LC5048h of 1.74 mg AI/L. In North American tadpoles *(Bufo americanus, Rana pipiens,* and *R. clamitans),* Edginton et al. (2004) found LC5096h of 1.5–4.7 mg AI/l using Vision (a formulation that also includes the POEA surfactant). For the three species used in our mesocosm experiment, Relyea (2005*b*) found LC5016d values of 1.4 mg AI/L for gray tree frogs, 2.5 mg AI/L for American toads, and 2.5 mg AI/L for leopard frogs. **All of this suggests that Roundup with the POEA surfactant can cause substantial mortality in larval amphibians**.”

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**THE LETHAL IMPACT OF ROUNDUP ON AQUATIC AND TERRESTRIAL AMPHIBIANS**

By Rick Relyea **Ph. D**.

Published by Ecological Applications, August 2005

https://www.researchgate.net/publication/228341272\_The\_Lethal\_Impact\_of\_RoundupR\_on\_Aquatic\_and\_Terrestrial\_Amphibians#:~:text=After%20one%20day%2C%20Roundup%20killed,could%20lead%20to%20population%20declines.&text=Content%20may%20be%20subject%20to%20copyright.

Excerpts:

“Recent laboratory studies have indicated that Roundup may be highly lethal to North American tadpoles, but we need to determine whether this effect occurs under more natural conditions and in post-metamorphic amphibians. I assembled communities of three species of North American tadpoles in outdoor pond mesocosms that contained different types of soil (which can absorb the pesticide) and applied Roundup as a direct overspray. **After three weeks, Roundup killed 96–100% of larval amphibians (regardless of soil presence).** I then exposed three species of juvenile (post-metamorphic) anurans to a direct overspray of Roundup in laboratory containers. After one day, Roundup killed 68–86% of juvenile amphibians. These results suggest that Roundup, a compound designed to kill plants, can cause extremely high rates of mortality to amphibians that could lead to population declines.”

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**Is Glyphosate Safe? Here’s What the Science Says About this Popular Herbicide**

Published by Organic Gardening, 2020

https://www.theplantway.com/glyphosate-safe/

Excerpts:

**“Even below regulatory levels, research published in the Food and Chemical Toxicology Journal states that the potential toxic effects of glyphosate include neurodevelopmental (impairment of the brain and central nervous system), reproductive, and transgenerational, and that these effects could be explained by endocrine disruption and oxidative stress.**

While glyphosate and other ingredients in herbicides can be detrimental to health, they also have an affect on bacteria. One study found that bacteria developed a faster antibiotic resistance when exposed to popular herbicides like Roundup.

Controversy of a “cover up” was sparked when the European Food Safety Authority (EFSA) concluded that glyphosate was “unlikely to pose a carcinogenic hazard to humans.”

However, when lawmakers requested access to the studies which helped the EFSA come to this conclusion, they were denied.

The reason given was that the companies which provided the studies could have their commercial interests harmed.”

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**Roundup: Quick Death for Weeds, Slow and Painful Death for You**

By Sarah Pope

Published by the Healthy Home Economist

https://www.thehealthyhomeeconomist.com/roundup-quick-death-for-weeds-slow-and-painful-death-for-you/

Excerpts:

“**The trouble is, while Roundup is highly effective at killing weeds, it’s also proving highly effective at killing us t**oo – slowly but surely and insidiously – via **Roundup’s deadly active ingredient – glyphosate.**

While the pesticide industry maintains that glyphosate is minimally toxic to humans, new research by the journal Entropy strongly argues otherwise by shedding light on exactly how glyphosate disrupts mammalian physiology.

Authored by Anthony Samsel and Stephanie Seneff of MIT, the paper investigates glyphosate’s inhibition of cytochrome P450 (CYP) enzymes, an overlooked component of lethal toxicity to mammals.

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**Glyphosate Formulations Induce Apoptosis and Necrosis in Human Umbilical, Embryonic, and Placental Cells**

By Nora Benachour,and Gilles-Eric S?text=0065,0301ralini

Published in *Chemical. Research in Toxicology*, December 23, 2008

http://pubs.acs.org/doi/abs/10.1021/tx800218n

Excerpts:

“We have evaluated the toxicity of four glyphosate (G)-based herbicides in Roundup (R) formulations, from 105 times dilutions, on three different human cell types. This dilution level is far below agricultural recommendations and corresponds to low levels of residues in food or feed. The formulations have been compared to G alone and with its main metabolite AMPA or with one known adjuvant of R formulations, POEA. HUVEC primary neonate umbilical cord vein cells have been tested with 293 embryonic kidney and JEG3 placental cell lines. **All R formulations cause total cell death within 24 h, through an inhibition of the mitochondrial succinate dehydrogenase activity, and necrosis, by release of cytosolic adenylate kinase measuring membrane damage**. They also induce apoptosis via activation of enzymatic caspases 3/7 activity. This is confirmed by characteristic DNA fragmentation, nuclear shrinkage (pyknosis), and nuclear fragmentation (karyorrhexis), which is demonstrated by DAPI in apoptotic round cells. G provokes only apoptosis, and HUVEC are 100 times more sensitive overall at this level. The deleterious effects are not proportional to G concentrations but rather depend on the nature of the adjuvants. AMPA and POEA separately and synergistically damage cell membranes like R but at different concentrations. Their mixtures are generally even more harmful with G. In conclusion, the R adjuvants like POEA change human cell permeability and amplify toxicity induced already by G, through apoptosis and necrosis. The real threshold of G toxicity must take into account the presence of adjuvants but also G metabolism and time-amplified effects or bioaccumulation. This should be discussed when analyzing the in vivo toxic actions of R. This work clearly confirms that the adjuvants in Roundup formulations are not inert. Moreover, the proprietary mixtures available on the market could cause cell damage and even death around residual levels to be expected, especially in food and feed derived from R formulation-treated crops.”

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**Glyphosate-based herbicides are toxic and endocrine disruptors in human cell lines**

By **Céline Gasnier Ph.D., Coralie DumontPh.D., Nora BenachourPh.D., Emilie ClairPh.D., Marie-Christine ChagnonPh.D. and Gilles-Eric SéraliniPh.D.**

Published by Toxicology, August 29, 2009

https://pubmed.ncbi.nlm.nih.gov/19539684/

Excerpts:

“We exposed human liver HepG2 cells, a well-known model to study xenobiotic toxicity, to four different formulations and to glyphosate, which is usually tested alone in chronic *in vivo* regulatory studies. We measured cytotoxicity with three assays (Alamar Blue®, MTT, ToxiLight®), plus genotoxicity (comet assay), anti-estrogenic (on ERα, ERβ) and anti-androgenic effects (on AR) using gene reporter tests. We also checked androgen to estrogen conversion by aromatase activity and mRNA. All parameters were disrupted at sub-agricultural doses with all formulations within 24 h. These effects were more dependent on the formulation than on the glyphosate concentration. **First, we observed a human cell endocrine disruption from 0.5 ppm on the androgen receptor in MDA-MB453-kb2 cells for the most active formulation (R400), then from 2 ppm the transcriptional activities on both estrogen receptors were also inhibited on HepG2**. Aromatase transcription and activity were disrupted from 10 ppm. Cytotoxic effects started at 10 ppm with Alamar Blue assay (the most sensitive), and DNA damages at 5 ppm. A real cell impact of glyphosate-based herbicides residues in food, feed or in the environment has thus to be considered, and their classifications as carcinogens/mutagens/reprotoxics is discussed.”

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**Start going up**

**Glyphosate and Non-Hodgkin’s Lymphoma**

Published by the Weston A. Price Foundation, January 21, 2019

https://www.westonaprice.org/health-topics/environmental-toxins/glyphosate-and-non-hodgkins-lymphoma

Excerpts:

“A historic trial against Monsanto that linked glyphosate to non-Hodgkin’s lymphoma recently settled in favor of the plaintiff. Regulatory agencies are revisiting glyphosate as a potential carcinogen.

* Human and animal studies show that glyphosate causes oxidative damage and chromosomal aberrations, which are two well-known precursors to cancer.
* Thyroid cancer and liver cancer are both rising dramatically in the U.S. population, in lockstep with the rise in glyphosate usage on core crops. It is extremely unlikely that this could have occurred by chance.
* Autoimmune disease, including celiac disease, is on the rise and is a strong risk factor for non-Hodgkin’s lymphoma. Both celiac disease and the increased cancer risk could be directly due to glyphosate poisoning.
* Glyphosate sets up a perfect storm in the gut to induce autoimmune disease through its severe disruption of the gut microbiome. In the context of exposure to glyphosate, gut exposure to pathogens will lead to a poor immune response to infection and an increased likelihood of developing autoimmune disease.
* A protein called activation-induced deaminase (AID) plays an essential role in the development of B-cell lymphomas such as non-Hodgkin’s lymphoma. Glyphosate can affect AID and another protein called Nup98, triggering a number of “out-of-control” changes that include mutations in other proteins. Some of the affected cells begin endlessly cloning themselves and become tumor cells.
* Glyphosate induces excessive calcium uptake in multiple cell types, which can trigger runaway processes involving NF-kappa-B (a powerful signaling molecule) that also contribute to mutations and tumor cell proliferation.
* Glyphosate has a uniquely destructive ability to function as an amino acid analogue of glycine (an important protein building block). When glyphosate gets incorporated in place of glycine, it has enormous disruptive consequences on protein behavior.
* **In addition to cancer, the runaway processes set into motion by glyphosate’s substitution for glycine could be responsible for increases in sudden death and heart failure in both the young and the old**.
* The “willy-nilly” displacement of glycine with glyphosate, which occurs in a random and unpredictable fashion, will have complex and confusing consequences, which may explain the varied metabolic disruptions now being traced to glyphosate exposure.
* Glyphosate uptake in utero can lead to rare genetic mutations and rare birth defects in the next generation.

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**Glyphosate Toxic & Roundup Worse**

By Mae-Wan Ho **Ph.D.**

Published by the Institute of Science in Society, 07/03/05

http://www.i-sis.org.uk/GTARW.php

mailto:m.w.ho@i-sis.org.uk

Excerpts:

“**There is, indeed, direct evidence that glyphosate inhibits RNA transcription in animals at a concentration well below the level that is recommended for commercial spray application**. Transcription was inhibited and embryonic development delayed in sea urchins following exposure to low levels of the herbicide and/or the surfactant polyoxyethyleneamine. The pesticide should be considered a health concern by inhalation during spraying [4].”

New research shows that a brief exposure to commercial glyphosate caused liver damage in rats, as indicated by the leakage of intracellular liver enzymes. In this study, glyphosate and its surfactant in Roundup were also found to act in synergy to increase damage to the liver [5].

Three recent case-control studies suggested an association between glyphosate use and the risk of non-Hodgkin lymphoma [6-8]; while a prospective cohort study in Iowa and North Carolina that includes more than 54 315 private and commercial licensed pesticide applicators suggested a link between glyphosate use and multiple myoeloma [9]. Myeloma has been associated with agents that cause either DNA damage or immune suppression.”

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**Hazards of the World’s Most Common Herbicide**

By Cheryl Long

Published in *Mother Earth News*, October/November 2005

http://www.motherearthnews.com/Organic-Gardening/2005-10-01/Hazards-of-the-Worlds-Most-Common-Herbicide.aspx

Excerpts:

**“New scientific studies link Roundup (glyphosphate), the most widely used herbicide in the world, to a host of health risks, such as cancer, miscarriages and disruption of human sex hormones.”**

“A group of scientists from the University of Caen in France found that human placental cells are very sensitive to the herbicide at concentrations lower than the agricultural use, and that it disrupts human sex hormones. The scientists concluded that the herbicide could “induce reproduction problems” in humans.

In another study, University of Pittsburgh biologist Rick Relyea looked at the effect of Roundup on other life forms. Relyea found that the herbicide caused an 86-percent decline in the total population of tadpoles.”

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**Maternal glyphosate exposure causes autism-like behaviors in offspring through increased expression of soluble epoxide hydrolase**

Published by the National Library of Medicine

https://pubmed.ncbi.nlm.nih.gov/32398374/

Excerpts:

“Here, we found ASD-like behavioral abnormalities in juvenile offspring after maternal exposure to high levels of formulated glyphosate. Furthermore, we found higher levels of sEH in the prefrontal cortex (PFC), hippocampus, and striatum of juvenile offspring, and oxylipin analysis showed decreased levels of epoxy-fatty acids such as 8 (9)-EpETrE in the blood, PFC, hippocampus, and striatum of juvenile offspring after maternal glyphosate exposure, supporting increased activity of sEH in the offspring. **Moreover, we found abnormal composition of gut microbiota and short-chain fatty acids in fecal samples of juvenile offspring after maternal glyphosate exposur**e.”

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**Lab Study Establishes Glyphosate Link to Birth Defects**

Published by *Science in Society*, 04/10/10

https://www.i-sis.org.uk/glyphosateCausesBirthDefects.php

Excerpts:

“In the first experiment, *Xenopus laevis* (the African ‘clawed toad’, which is really a frog) embryos were incubated with high dilutions of a commercial glyphosate based herbicide (Roundup Classic, Monsanto). The embryos were exposed from the 2-cell stage with dilutions of the herbicide at 3 000-, 4 000-, and 5 000-fold (the most dilute equivalent to 430 mm of glyphosate). **They found highly abnormal embryos in the regions of the head and central nervous system, and shortening of the anterior-posterior axis, even at the highest dilution. These led to deformities in the head cartilages at tadpole stage**.

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**Literature review of impacts of glyphosate herbicide on amphibians: What risks can the silvicultural use of this herbicide pose for amphibians in B.C.?**

By Purnima P. Govindarajulu Ph.D.,

Published by the British Columbia Ministery of the Environment, Wildlife Report No. R-28, June 2008

http://www.llbc.leg.bc.ca/public/pubdocs/bcdocs/442206/finishdownloaddocument.pdf

Excerpts:

“5. SUMMARY OF GLYPHOSATE IMPACTS ON AMPHIBIANS

This summary is derived almost entirely from toxicological studies on tadpoles and late-stage anuran embryos. The impact of glyphosate herbicides on other amphibians and other life stages is virtually unknown.

• **Recent studies have shown that tadpoles are one of the vertebrate groups most sensitive to the toxicity effects of most commercial formulations of glyphosate herbicides, including Vision.**

• The estimated LC50 values for some species of amphibians are at or below the expected environmental concentration (EEC) of 1.43 mg a.e./L of Vision (Table 1). Most LC50 values are calculated from experimental durations of 24 to 96 hours, but at low concentrations death may not occur until after 96 hours. This suggests that amphibians may be even more sensitive than the published LC50 values suggest.

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**Glyphosate Exposure Could Disrupt Human Gut Microbiome**

https://www.forbes.com/sites/helenalbert/

Excerpts:

“Having the wrong microbe profile, or 'microbiome', can make us more susceptible to a variety of diseases including cancer, autoimmune diseases and depression.

To test whether the effect seen in bees could also be relevant to humans exposed to glyphosate, Pere Puigbò, a senior researcher at the University of Turku in Finland, and his colleagues tested how many species of bacteria present in an average human gut are susceptible to damage by exposure to glyphosate.

**They found that 54% of around 101 species of bacteria commonly found in our guts could be damaged or killed if exposed to glyphosate in high enough quantities.”**

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**Monsanto's Toxic Herbicide Glyphosate: A Review of its Health and Environmental Effects**

By Andre Leu

Published by Organic Producers Association of Queensland, May 15, 2007

http://www.organicconsumers.org/articles/article\_5229.cfm

Excerpts:

“**In California, where there is a mandatory system of reporting pesticide poisoning, Glyphosate is the third most common cause of pesticide illness in farm workers. It is the most common form of reported pesticide poisoning in landscape gardeners**.”

“Two separate studies in Sweden have linked exposure to Glyphosate to Hairy Cell Leukemia and Non Hodgkins Lymphoma. These types of cancers were extremely rare, however non-Hodgkins lymphoma is the most rapidly increasing cancer in the Western world. It has risen by 73% in the USA since 1973. Another study has found a higher incidence of Parkinson disease amongst farmers who used herbicides, including glyphosate.”

“Other studies show that Glyphosate and commercial herbicides containing Glyphosate cause a range of cell mutations and damage to cell DNA. These types of changes are usually regarded as precursors to cancer and birth defects.”

“Studies show that exposure to Glyphosate is associated with a range of reproductive effects in humans and other species. Research from Ontario, Canada found that a father's exposure to Glyphosate was linked to an increase in miscarriages and premature births in farm families.”

“Glyphosate caused a decrease in the sperm count of rats and an increase in abnormal and dead sperms in rabbits. Pregnant rabbits exposed to Glyphosate had a decrease in the weight of their babies.”

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**Special Investigation: The Pesticides and Politics of America's Eco-War**

By Mike Ludwig

Published by *Truthout*, June 9, 2011

https://truthout.org/articles/special-investigation-the-pesticides-and-politics-of-americas-ecowar/

Excerpts:

“Glyphosate is the poster child for the global pesticide controversy due to its place in the ongoing debate over mega-farming and genetically engineered crops. Industry scientists say it's one of the safest herbicides in the world, while independent scientists have discovered among the widespread use of glyphosate-based herbicides and non-Hodgkin's lymphoma, birth defects and even attention deficit disorder. **Research also shows that additives like surfactants in glyphosate in herbicides like Roundup are more toxic than glyphosate itself and can increase the toxicity of glyphosate**.”

“The war on invasive species is a war on a fact of life. Humans have caused or exacerbated these species "invasions" by changing habitats and introducing species to new areas, and now we are trying to turn back the clock in an attempt to prevent nature from taking its new course. As long as people attempt to dominate the land, extract its resources and shape it to their liking, there will be money to be made and dramatic consequences for other livings things. The search for a balance between supporting our collective desire to prosper and a healthy natural world is sure to spark more heated debates for years to come.”

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**From Chapter 3. Adverse impacts in the report: Risky Business: Invasive species management on National Forests - A review and summary of needed changes in current plans, policies and programs**

A publication of the Kettle Range Conservation Group, February, 2001

http://kettlerange.org/weeds/Chapter-3.html

Excerpts:

“Case example: Okanogan NF Integrated Weed Management Environmental Assessment (EA) (1997, 1999)

The Okanogan NF Integrated Weed Management EA for 1997 received many comments from the public asking for documentation and analysis of the risks of herbicides to human health and safety, yet all of these concerns for safety were lumped into a single issue on p. 15-16:

“Noxious weed populations can degrade recreational experiences by decreasing the desirability of campsites, replacing native plant populations in developed and dispersed areas and changing the scenery. Herbicide contact could pose risks to human health through skin exposure, inhalation, or ingestion. Some noxious weeds also pose risks to human health.”

The marginalization of human health as mere “issues” rather than actual hazards suggests that there was never any intention of questioning the safety or use of herbicides, except in a very limited fashion, and this is borne out in the analysis section.

Two years later the Okanogan NF prepared a second EA (1999) and through another public comment process, the issues identified through public comments were exactly the same.

**Why are the issues of public health ignored? According to the rationalization given in the EA (Okanogan NF, 1997, p. 17), public comments were addressed in a “higher level document”. In other words, concerns about human health and safety were not considered in the EA. By its limited scope, the agency effectively avoids having to consider issues that it doesn't want to.**

The purpose of an EA is to assess a problem, propose and evaluate alternatives and select the most effective remedy, which should be the least harmful to the environment. In this case, the alternative to use herbicides had been selected prior to doing an analysis. The EA was only used to justify a predetermined decision rather than truly explore alternatives.”

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**Roundup: Birth Defects Caused By World's Top-Selling Weedkiller, Scientists Say**

By Lucia Graves

Published on Friday, June 24, 2011

http://www.huffingtonpost.com/2011/06/24/roundup-scientists-birth-defects\_n\_883578.html

Excerpts:

**The study, found that glyphosate causes malformations in frog and chicken embryos at doses far lower than those used in agricultural spraying. It also found that malformations caused in frog and chicken embryos by Roundup and its active ingredient glyphosate were similar to human birth** defects found in genetically modified soy-producing regions.

"The findings in the lab are compatible with malformations observed in humans exposed to glyphosate during pregnancy," wrote Carrasco, director of the Laboratory of Molecular Embryology at the University of Buenos Aires. "I suspect the toxicity classification of glyphosate is too low.” “

“Fagan told HuffPost that among developmental biologists who are not beholden to the chemical industry or the biotechnology industry, there is strong recognition that Carrasco’s research is credible.”

"For me as a scientist, one of the reasons I made the effort to do this research into the literature was to really satisfy the question myself as to where the reality of the situation lies,” he added. “Having thoroughly reviewed the literature on this, I feel very comfortable in standing behind the conclusions Professor Carrasco came to and the broader conclusions that we come to in our paper.”

“We can’t figure out how regulators could have come to the conclusions that they did if they were taking a balanced took at the science, even the science that was done by the chemical industry itself.”

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**Genetically Modified Soy Linked to Sterility, Infant Mortality**

By Jeffery Smith

Published by foodconsumer.org, September 22, 2010

https://preventdisease.com/news/10/042610\_gmo\_soy\_sterility\_infant\_mortality.shtml

Excerpts:

"This study was just routine," said Russian biologist Alexey V. Surov, in what could end up as the understatement of this century. Surov and his colleagues set out to discover if Monsanto's genetically modified (GM) soy, grown on 91% of US soybean fields, leads to problems in growth or reproduction. What he discovered may uproot a multi-billion dollar industry.

After feeding hamsters for two years over three generations, those on the GM diet, and especially the group on the *maximum* GM soy diet, showed devastating results. By the third generation, most GM soy-fed hamsters lost the ability to have babies. They also suffered slower growth, and a high mortality rate among the pups.

And if this isn't shocking enough, some in the third generation even had hair growing inside their mouths—a phenomenon rarely seen, but apparently more prevalent among hamsters eating GM soy.”

“In addition to the GMOs, it could be contaminants, he said, or higher herbicide residues, such as Roundup. **There is in fact much higher levels of Roundup on these beans; they're called "Roundup Ready**." Bacterial genes are forced into their DNA so that the plants can tolerate Monsanto's Roundup herbicide. Therefore, GM soy always carries the double threat of higher herbicide content, couple with any side effects of genetic engineering.

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**Glyphosate Formulations Induce Apoptosis and Necrosis in Human Umbilical, Embryonic, and Placental Cells**”

By, Nora Benachour and Gilles-Eric Seralini

Published by *Chemical Research in Toxicology*, 2009, 22 (1), pp 97–105

http://pubs.acs.org/doi/abs/10.1021/tx800218n

Excerpts:

“We have evaluated the toxicity of four glyphosate (G)-based herbicides in Roundup (R) formulations, from 105 times dilutions, on three different human cell types. This dilution level is far below agricultural recommendations and corresponds to low levels of residues in food or feed.

The formulations have been compared to G alone and with its main metabolite AMPA or with one known adjuvant of R formulations, POEA. HUVEC primary neonate umbilical cord vein cells have been tested with 293 embryonic kidney and JEG3 placental cell lines. **All R formulations cause total cell death within 24 h, through an inhibition of the mitochondrial succinate dehydrogenase activity, and necrosis, by release of cytosolic adenylate kinase measuring membrane damage**. They also induce apoptosis via activation of enzymatic caspases 3/7 activity. This is confirmed by characteristic DNA fragmentation, nuclear shrinkage (pyknosis), and nuclear fragmentation (karyorrhexis), which is demonstrated by DAPI in apoptotic round cells.”

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**Hazards of the World’s Most Common Herbicide**

By Cheryl Long

Published in Mother Earth News, October/November 2005

http://www.motherearthnews.com/Organic-Gardening/2005-10-01/Hazards-of-the-Worlds-Most-Common-Herbicide.aspx

Excerpts:

“Symptoms of exposure to glyphosate include eye irritation, blurred vision, skin rashes, burning or itchy skin, nausea, sore throat and difficulty breathing, headache, lethargy, nose bleeds and dizziness.

**In lab tests, glyphosate and herbicides containing glyphosate caused genetic damage to human and animal cells.**

Studies of farmers and other people exposed to glyphosate herbicides link this exposure to increased risks of cancer, miscarriages and attention deficit disorder. Additional laboratory tests have confirmed the results of these studies.

Laboratory evidence indicates that glyphosate herbicides can reduce production of sex hormones.

Studies of glyphosate contamination of water are limited, but new results indicate that it can easily contaminate streams in both agricultural and urban areas.

Glyphosate herbicides cause more off-target damage incidents than all but one other herbicide — 2, 4-D.

Glyphosate herbicides cause genetic damage and harm to the immune system in fish. In frogs, glyphosate herbicides cause genetic damage and abnormal development.”

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**Monsanto's Roundup Herbicide Used in Argentina Could Cause Birth Defects**

Published by Organic Consumers Association, 2021

https://www.organicconsumers.org/news/monsantos-roundup-herbicide-used-argentina-could-cause-birth-defects

Excerpts:

“BUENOS AIRES – The herbicide used on genetically modified soy – Argentina’s main crop – could cause brain, intestinal and heart defects in fetuses, according to the results of a scientific investigation released Monday.

Although the study “used amphibian embryos,” the results “are completely comparable to what would happen in the development of a human embryo,” embryology professor Andres Carrasco, one of the study’s authors, told Efe.”

“Carrasco said that the research found that “pure glyphosate, in doses lower than those used in fumigation, causes defects ... (and) could be interfering in some normal embryonic development mechanism having to do with the way in which cells divide and die.”

“ “**The companies say that drinking a glass of glyphosate is healthier than drinking a glass of milk, but the fact is that they’ve used us as guinea pigs,” he said**.”

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Western Leopard Frogs Move a Step Closer to Protection -- *U.S. Fish and Wildlife Service: Pesticides, Disease, Invasive Species, and Habitat Loss May Threaten Native Frogs with Extinction*

Center for Biological Diversity news release, June 30, 2009

http://www.biologicaldiversity.org/news/press\_releases/2009/western-leopard-frog-06-30-2009.html

Excerpts:

“DENVER*, Colo.*— Recognizing the threat posed by expanding use of dangerous pesticides across 18 western states, competition from invading bullfrogs, nonnative diseases, and loss of wetlands, the U.S. Fish and Wildlife Service will announce tomorrow their conclusion that western populations of the northern leopard frog may warrant protection under the Endangered Species Act.”

“**The use of Roundup (a proprietary herbicide containing glyphosate), which is lethal to amphibians even at recommended levels according to recent studies, also threatens the western leopard frog**. Roundup Ready crops (resistant to Roundup so the herbicide can be broadly applied to kill weeds) comprise a significant portion of crop acreage in the midwestern United States. In 2004, Roundup Ready soybean crops comprised 89 percent of all soybean crops in Iowa, 82 percent in Minnesota, 92 percent in Nebraska, 82 percent in North Dakota, and 95 percent in South Dakota.”

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**Anecdotal Evidence of RoundUp's Toxicity**

From July 1987 edition of *The Progressive*, and article entitled 'Weed Killer':

http://www.naturescountrystore.com/roundup/page3.html

Excerpts:

“Eduardo Neaves, a 12-year-old, went swimming in a canal in Coral Gables, Florida that was contaminated with four times the recommended amount of RoundUp herbicide. The child became completely paralyzed, and five years after the incident suffers residual nervous system damage.

The EPA, according to this article, in 1985 reported on the case of a 59-year-old woman in Tennessee who has suffered central nervous system damage after exposure to RoundUp.

Monsanto's original neurotoxicity studies on RoundUp were ruled invalid by the EPA due to "extensive gaps in the raw data supporting study findings and conclusions. There has been no requirement for a new study on the neurotoxicity of RoundUp.

Other persons have experienced swelling in legs, arms, and joints after exposure to RoundUp.

**Still others have experienced the following after exposures to RoundUp: central nervous system damage,  body swelling in legs, face and abdomen. Other RoundUp overexposure symptoms reported include visual, hearing, taste, and smell disturbances; balance disorder; body-wide muscle twitches and tics; seizure disorder; muscle paralysis; peripheral neuropathy; loss of gross motor skills and loss of fine motor skills**.”

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**New Evidence Establishes Dangers of Roundup Weedkiller**

By Chee Yoke Heong

*Third World Resurgence*, No. 176, April 2005

Re-published by Project Censored

https://oawhealth.com/article/new-evidence-establishes-dangers-of-roundup-weed-killer/

Excerpts:

“Three recent studies show that Roundup, which is used by farmers and home gardeners, is not the safe product we have been led to trust.

**A group of scientists led by biochemist Professor Gilles-Eric Seralini from the University of Caen in France found that human placental cells are very sensitive to Roundup at concentrations lower than those currently used in agricultural ap**plication.

An epidemiological study of Ontario farming populations showed that exposure to glyphosate, the key ingredient in Roundup, nearly doubled the risk of late miscarriages. Seralini and his team decided to research the effects of the herbicide on human placenta cells. Their study confirmed the toxicity of glyphosate, as after eighteen hours of exposure at low concentrations, large proportions of human placenta began to die. Seralini suggests that this may explain the high levels of premature births and miscarriages observed among female farmers using glyphosate.”

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**Why Monsanto is paying farmers to spray its rivals’ herbicides**

By Tom Philpott

Published by Grist, October 20, 2010

http://www.grist.org/article/food-2010-10-20-why-monsanto-paying-farmers-to-spray-rival-herbicides/

Excerpts:

“**In short, Monsanto's Roundup Ready technology is emerging as an environmental disaster**. The question isn't why a judge demanded an environmental impact study of Roundup Ready sugar beets in 2010; it's that no one did so in 1996 before the technology was rolled out. After all, the Union of Concerned Scientists was already quite, well, concerned back then.”

“Rather than spark a reassessment of the wisdom of relying on toxic chemicals, the failure of Roundup Ready has the U.S. agricultural establishment scrambling to intensify chemical use. Companies like Dow Agriscience are dusting off old, highly toxic poisons and promoting them as the "answer" to Roundup's problems.”

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**EPA Urged to Put Public Health Over Monsanto Profits by Banning Cancer-Linked Glyphosate**

By Jake Johnson

Published in Common Dreams, June 26, 2019

https://www.organicconsumers.org/news/epa-urged-to-put-public-health-over-monsanto-profits-by-banning-glyphosate

Excerpts:

**"It's time for the EPA to stand up to Monsanto-Bayer and protect farmers, farm workers, lawn care workers, and consumers."**

**—Alexis Baden-Mayer**

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**Monsanto’s Roundup Herbicide Threatens Public Health**

*Rachel's Environment and Health News*, issue 751, Sept. 5, 2002.

Reprinted by **Organic Consumers Association**

Please follow this link to read 23 scientific papers about glyphosate and other irrefutable information verifying glyphosate’s toxicity.

http://www.whale.to/b/roundup\_h.html

Excerpts:

**“Two new studies indicate that Monsanto's herbicide, Roundup, is a hormone-disruptor and is associated with birth defects in humans.**

Farm families that applied pesticides to their crops in Minnesota were studied to see if their elevated exposure to pesticides caused birth defects in their children. The study found that two kinds of pesticides -- fungicides and the herbicide Roundup -- were linked to statistically significant increases in birth defects. Roundup was linked to a 3-fold increase in neurodevelopmental (attention deficit) disorders. [EHP Supplement 3, Vol. 110 (June 2002), pgs. 441-449.]

“A recent test tube study reveals that Roundup can severely reduce the ability of mouse cells to produce hormones. Roundup interferes with a fundamental protein called StAR (steroidogenic acute regulatory protein). The StAR protein is key to the production of testosterone in men (thus controlling male characteristics, including sperm production) but also the production of adrenal hormone (essential for brain development), carbohydrate metabolism (leading to loss or gain of weight), and immune system function. The authors point out that "a disruption of the StAR protein may underlie many of the toxic effects of environmental pollutants." [EHP Vol. 108, No. 8 (August 2000), pgs. 769-776.]”

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**Issue: Cumulative Impacts to Amphibians Species**

By Gilles-Eric Séralini

Published by A Laboratoire de Biochimie et Biologie Moleculaire publication, Université de Caen, February 2006

http://www.signaloflove.org/clearcutting/reports/cumulativeimpactstoamphibian

Excerpts:

“The findings of Richard et al. (2005) are an important addition to our understanding that the health and environmental effects of formulated pesticide products are not fully reflected in tests conducted on the active ingredient(s) alone. It has been long known that the adjuvants (commonly and misleadingly called "inert" ingredients) may be toxic and may enhance or supplement the toxic effects of the active pesticidal ingredient.

In the case of glyphosate-containing products, this phenomenon was well demonstrated in the data submitted to the (EPA) by the registrant (Monsanto), and summarized by the U.S. EPA in the Reregistration Eligibility Document (RED) for glyphosate (U.S. EPA 1993). For example, based on the registrant's own tests of acute toxicity to freshwater fish, the U.S. EPA classified technical grade glyphosate as "slightly toxic" to "practically non-toxic" and formulated products ranged from "moderately toxic" to "practically non-toxic." Tested alone, the surfactant adjuvant (identified as "inert") was "highly toxic" to "slightly toxic." Similar differences were reported in tests of acute toxicity to freshwater invertebrates.

Based in part on the data in the glyphosate RED (U.S. EPA 1993), the New York State Attorney General's office successfully pursued an action against Monsanto in 1996 (Attorney General of the State of New York 1996). **At that time, Monsanto was making advertising claims about the toxicity of the Roundup products based on data from tests on the active ingredient alone. Such claims are scientifically unfounded and inherently deceptive**. The Attorney General's action was facilitated by the availability of at least some limited information about the inert ingredients and their toxicity. That same sort of information enabled Richard et al. (2005) to conduct their study.

Unfortunately, that is not always the case, and for many pesticide products, little or no information about the identity of inert ingredients is publicly available. Registrants are generally required to conduct acute toxicity tests on formulated products, but they traditionally conduct chronic toxicity tests on the active ingredient alone. Even when formulated products are tested, the identity of inert ingredients is rarely revealed in the open literature, publicly available regulatory documents, or product labels. Therefore, independent research is stymied, and the public is ill-informed in the marketplace.”

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**Say What? A Chemical Can Damage Your Lungs, Liver and Kidneys and Still Be Labeled "Non-Toxic"?”**

By Monona Rossol

Ms. Rossol is a research chemist, author and member of the American Industrial Hygiene Association, May 9, 2011

http://www.alternet.org/story/150888/say\_what\_a\_chemical\_can\_damage\_your\_lungs%2C\_liver\_and\_kidneys\_and\_still\_be\_labeled\_%22non-toxic%22?page=entire

Excerpts:

“Defining Toxic Asbestos is an extreme example, which I use here and in my book [*Pick Your Poison: How Our Mad Dash to Chemical Utopia is Making Lab Rats of Us All*](http://www.powells.com/partner/32513/biblio/62-9780470550915-0)to make a point, but many other “nontoxic” products could be full of toxic chemicals. I’m hoping this essay leaves you with a general distrust of the nontoxic label, both in the past and currently. When you see “nontoxic” on a product, keep the following facts in mind:

* “Nontoxic” can still legally mean that there are no immediate, acute hazards as determined by the LD50 and LC50 tests.
* “Nontoxic” may mean there are little or no chronic data available on the substance. If the substance is not acutely toxic, and one can’t prove it is toxic in the long term, many manufacturers feel that they have the right to call it nontoxic. Even if there are studies showing that the substance is toxic, manufacturers in the United States have traditionally waited for absolute, unequivocal proof, which in most cases is never available because we don’t study our chemicals.
* An art material is “nontoxic” if a toxicologist paid by the manufacturer decides it is safe. The dramatic failure in this labeling procedure was illustrated with the lead ceramic glazes and asbestos-containing materials such as talc. Asbestos-containing talcs are still found in some art and craft materials today.

Some art materials that have never been evaluated by a toxicologist may be labeled “nontoxic” illegally due to weak enforcement of the art materials labeling law. For example, in 1995, a cameraman and a reporter from Channel 9 in New York went with me to a major art materials outlet. That night on the evening news, we showed viewers about a dozen imported products that did not conform to the law, some labeled “nontoxic,” which were being sold illegally. This is still true today, and a little research will lead you to many sources of noncompliant “nontoxic” products.

* Labeling of ordinary consumer products is pretty much up to the manufacturer and its paid advisers. Because there is no enforcement mechanism in the regulations for the chronic hazard labeling of ordinary consumer products, there is not much incentive to provide warnings.
* There is no regulatory requirement to warn consumers about damage to most of the body’s organs, such as the lungs, the liver, and the kidneys. Only four types of chronic hazards are covered by the Federal Hazardous Substances Act regulations. These are cancer, and developmental, reproductive, and neurological damage.”

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**Glyphosate herbicide, the poison from the skies”**

By **Chris Lang**

Published in WRM's bulletin Nº 97, August 2005

http://www.wrm.org.uy/bulletin/97/Glyphosate.html

Excerpts:

“**Glyphosate herbicides can have a range of impacts on human health, including genetic damage, skin tumours, thyroid damage, anaemia, headaches, nose bleeds, dizziness, tiredness, nausea, eye and skin irritation, asthma and breathing difficulties**. Several studies have indicated a link between glyphosate herbicides and non-Hodgkin's lymphoma, a type of cancer.

Not surprisingly, considering the amount of money that Monsanto makes from sales of glyphosate products, the company plays down the health risks of glyphosate. Monsanto claims that glyphosate herbicides pose only a "low risk to human health" as long as glyphosate is used "according to label directions". “

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**Roundup is Highly Lethal**

By Rick Relya Ph.D.

Dr. Relya Responds to Monsanto’s Concerns Regarding Recent Published Study

Mindfully.org, April 1, 2005

http://www.mindfully.org/GE/2005/Relyea-Monsanto-Roundup1apr05.htm

Excerpts:

“Concern #1: Roundup is only intended for terrestrial use, not aquatic use.

While it may be intended for terrestrial use, there is overwhelming evidence that Roundup gets into aquatic habitats, typically through inadvertent (or unavoidable) aerial overspray (Newton et al. 1984, Goldsborough and Brown 1989, Feng et al. 1990, Thompson et al. 2004). To determine the effect on amphibians, Relyea (2005a) simulated a direct overspray of a small wetland using pond mesocosms (1000-liter tanks). The result was widespread death for many species and the death rate was much higher than expected based on previous studies of Roundup. It is relatively common knowledge that Roundup should not be applied to large ponds and lakes, but it seems to be much less commonly appreciated that many amphibians are not produced in large ponds and lakes due to predation by fish. Instead, small temporary wetlands that may appear to be unimportant and only have 6" of water can, in fact, produce thousands of tadpoles. These small, temporary pools are either not avoided or not avoidable by aerial pesticide applications.

**Moreover, Roundup is not only lethal to amphibian larvae. New studies have found that Roundup can be highly lethal to terrestrial amphibians as well (Relyea 2005c).”**

**“Concern #2: The application rate of Roundup was 7 times too high**

The application rate of 6 ounces per 300 square feet came directly from the label of Monsanto's "Roundup Weed and Grass Killer". What Monsanto is claiming is that the application rate for this Roundup is higher than their listed application rate for other forms of Roundup. However, both application rates come from Monsanto. Moreover, it is well accepted by Monsanto and the applicators of Roundup that some types of weeds require up to four times the recommended application rate to be effective.”

**“Concern #4: A past risk assessment has shown that Roundup poses minimal risk to amphibians**

The risk assessment was conducted by Giesy et al. (2000), in cooperation with Monsanto, and the assessment was based on the available data at that time. For amphibians, data only existed for four species of Australian tadpoles and one species of African frog. From these studies, the LC50 estimates (the amount of pesticide needed to kill 50% of the animals) were 4 to 16 mg a.i./L (Mann and Bidwell 1999, Perkins et al. 2000).

More recent LC50 laboratory data for North American amphibians demonstrate that North American amphibians are much more sensitive; LC50 values range from 0.5 to 4.7 mg a.i./L (Edginton et al. 2004, Relyea 2005b). According to U.S. Fish and Wildlife classifications, this means that Roundup can no longer be considered slightly to moderately toxic, but rather moderately to highly toxic to North American amphibians.”

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**Quality of Toxicology Testing**

By Caroline, Cox

Published in Journal of Pesticide Reform, Volume 15, Number 3, Fall 1995. Northwest Coalition for Alternatives to Pesticides, Eugene, OR. Glyphosate, Part 1: Toxicology

http://www.inspiringlandscapes.com/hope/glyphos8.htm

Excerpts:

“Tests done on glyphosate to meet registration requirements have been associated with fraudulent practices.

Laboratory fraud first made headlines in 1983 when EPA publicly announced that a 1976 audit had discovered "serious deficiencies and improprieties" in toxicology studies conducted by Industrial Biotest Laboratories (IBT).44 Problems included "countless deaths of rats and mice that were not reported," "fabricated data tables," and "routine falsification of data."44

IBT was one of the largest laboratories performing tests in support of pesticide registrations.44 About 30 tests on glyphosate and glyphosate-containing products were performed by IBT, including 11 of the 19 chronic toxicology studies.45 **A compelling example of the poor quality of IBT data comes from an EPA toxicologist who wrote, "It is also somewhat difficult not to doubt the scientific integrity of a study when the IBT stated that it took specimens from the uteri (of male rabbits) for histopathological examination."46 (Emphasis added.)**

In 1991, laboratory fraud returned to the headlines when EPA alleged that Craven Laboratories, a company that performed contract studies for 262 pesticide companies including Monsanto, had falsified test results.47 "Tricks" employed by Craven Labs included "falsifying laboratory notebook entries" and "manually manipulating scientific equipment to produce false reports."48 Roundup residue studies on plums, potatoes, grapes, and sugarbeets were among the tests in question.49

The following year, the owner/president of Craven Laboratories and three employees were indicted on 20 felony counts. A number of other employees agreed to plead guilty on a number of related charges.50 The owner was sentenced to five years in prison and fined $50,000; Craven Labs was fined 15.5 million dollars, and ordered to pay 3.7 million dollars in restitution.48

Although the tests of glyphosate identified as fraudulent have been replaced, these practices cast shadows on the entire pesticide registration process.”

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**A multinational Exposed**

*Frontline*, Volume 22 - Issue 05, Feb. 26 - Mar. 11, 2005

http://www.hinduonnet.com/fline/fl2205/stories/20050311003312500.htm

Excerpts:

“However, the U.S. government regulatory agencies seem to have given Monsanto a long rope. The clout Monsanto enjoys in the U.S. government is by no means incidental. According to the Organic Consumers Association, Clarence Thomas, before being the Supreme Court Judge who put George W. Bush in office (in his first term), was a Monsanto lawyer; Anne Veneman, the U.S. Secretary of Agriculture, was on the board of directors of Monsanto's Calgene Corporation; Donald Rumsfeld, the Secretary of Defence, was on the board of directors of Monsanto's Searle Pharmaceuticals; Secretary of Health Tommy Thompson received $50,000 in donations from Monsanto during his winning campaign for Wisconsin's governorship; and **the two Congressmen who received the most donations from Monsanto during the last election were Larry Combest (Chairman of the House Agricultural Committee) and John Ashcroft (the Attorney-General).”**

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**Concerns Over Glyphosate Use**

*The Sun* (Malaysia), Friday August 20, 1999

http://www.poptel.org.uk/panap/archives/glywb.htm

Excerpts:

“**A recent study which shows clear links between exposure to the herbicide glyphosate and non-Hodgkin's lymphoma (NHL), a form of cancer that afflicts the lymphatic system, has caused worldwide concern over the safety of the herbicide on humans.**

**The study was conducted by eminent oncologists Dr Lennart Hardell and Dr Mikael Eriksson of Sweden and published in the journal Cancer by the American Cancer Society on March 15**.”

**“Monsanto's Argument:**

Previous evaluations conducted by the US Environmental Protection Agency (EPA) and the World Health Organization (WHO) suggest that glyphosate is not a mutagenic or carcinogenic.

WHO and the Food and Agriculture Organization (FAO) have approved the safety of glyphosate residues in genetically-engineered Roundup Ready soyabeans.

**PAN's Counter Argument:**

The EPA and WHO evaluations were done more than five years ago and based mainly on data submitted to them by Monsanto.

These evaluations did conclude that "there is no evidence of mutagenicity or carcinogenicity" based on the available data, but they do not support definitive assertions that glyphosate "is not mutagenic or carcinogenic".

Previous EPA and WHO evaluations which made similar claims for other chemicals had to be revised as new evidence came to light.

The establishment of the WHO's Acceptable Daily Intake (ADI) is based on limited studies using limited parameters which do not account for vulnerable groups such as children, the elderly, the sick and other groups that might have increased susceptibility to glyphosate exposure.”

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**Roundup Kills more than Weeds**

By Amanda Kimble-Evans

Published in *Mother Earth News*, December 2009/January 2010

http://www.motherearthnews.com/Sustainable-Farming/Roundup-Weed-Killer-Toxicity.aspx?page=2

Excerpts:

“To protect our health, the U.S. Environmental Protection Agency (EPA) sets maximum legal residue levels for every pesticide, for dozens of crops. **But a new study in the respected journal *Toxicology* has shown that, at low levels that are currently legal on our food, Roundup could cause DNA damage, endocrine disruption and cell death. The study, conducted by French researchers, shows glyphosate-based herbicides are toxic to human reproductive cells.”**

“Solvents and surfactants, legally considered ‘inert ingredients,’ are mixed with glyphosate in products such as Roundup weed killer to create chemical formulations that increase mobility and more direct access to the cells. ‘Those same factors that aid penetration into a plant, also aid penetration into the skin,’ says Vincent Garry, professor emeritus of pathology at the University of Minnesota. ‘These chemicals are designed to kill cells.’ ”

“Herbicide manufacturers are subject to fewer rules in the testing of inert ingredients than they are for active ingredients, explains Caroline Cox, research director at the Center for Environmental Health in Oakland, Calif. ‘The tests the EPA requires for inert ingredients cover only a small range of potential health problems,’ Cox says. ‘Testing for birth defects, cancer and genetic damage are required only on the active ingredients. But we’re exposed to both.’ ”

“ ‘Our bodies are gigantic spider webs of chemical communications that work in the parts-per-trillion range,’ says Warren Porter, professor of zoology and environmental toxicology at the University of Wisconsin. ‘When you put so-called ‘insignificant’ amounts of toxic chemicals into the mix, you have a molecular bull in a china shop. The possibilities for impact are endless.’

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**MYTH: The Government tests pesticides for safety before they are sold**

Published in *Wild Ones Journal*, Nov 17, 2006

http://www.for-wild.org/download/roundupmyth/roundupmyth.html

Excerpts:

“FACT: **The EPA (Environmental Protection Agency) does not test pesticides for safety. It relies on the manufacturers’ test data to make judgments. Recent probes have found that the experiments on which these data have been based, have been designed to show only what the manufacturer would like them to show**. This criticism of self-serving misrepresentation can be aimed equally validly at irresponsible experimenters bent on demonstrating toxicity of a given pesticide.

It seems that however this problem is approached, the EPA needs to take more affirmative action and responsibility. This is not likely to happen, as the EPA’s research program increasingly relies on corporate joint venture, according to agency documents obtained by Public Employees for Environmental Responsibility (PEER). Indeed, a study by the Government Accountability Office (the investigative arm of Congress – the same people who first told us of the $640 toilet seats and $1,000 hammers purchased with Department of Defense money), in April 2005, concluded that the EPA lacks safeguards to “evaluate or manage potential conflicts of interest” in corporate research agreements, as they are taking money from corporations that they are supposed to be regulating.”

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**MYTH: There are laws…**

Published in *Wild Ones Journal*, Nov 17, 2006

http://www.for-wild.org/download/roundupmyth/roundupmyth.html

Excerpts:

“FACT: The primary focus of the Federal Insecticide, Fungicide, and Rodenticide Act, originally enacted in 1947, was to provide federal control of pesticide distribution, sale, and use. The act has been amended many times over the years. One of these amendments permitted manufacturers protection of trade secrets. It is under these provisions that manufacturers circumvent a law that originally intended all information to be known – at least by the EPA. **The fact that today, with mass spectrometers, chemistry can determine the makeup of the inert ingredients, leaves only the end consumer in the dark.**

In 1990 the Office of the Attorney General of New York filed a request that all inert ingredients in pesticides be made public. The request was repeated a number of times through the decade, to no avail. Sixteen years later, in August of 2006, the attorneys general of 14 states have filed a similar petition to the EPA. This time the EPA is obliged to respond within a given time period.”

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**RoundUp—Lymphoma Connection**

By Sadhbh O' Neill

Published in *Genetic Concern*, June 22, 1999

http://www.hancock.forests.org.au/docs/herbicidesUpdate0602.htm

Excerpts:

“**A recent study by eminent oncologists Dr. Lennart Hardell and Dr. Mikael Eriksson of Sweden [1], has revealed clear links between one of the world's biggest selling herbicide, glyphosate, to non-Hodgkin's lymphoma, a form of cancer [2].”**

“In the study published in the 15 March 1999 Journal of American Cancer Society, the researchers also maintain that exposure to glyphosate 'yielded increased risks for NHL.' They stress that with the rapidly increasing use of glyphosate since the time the study was carried out, 'glyphosate deserves further epidemiologic studies.' “

“O' Neill concluded: 'The EPA when authorising Monsanto's field trials for Roundup-ready sugar beet did not consider the issue of glyphosate. They considered this to be the remit of the Pesticides Control Service of the Department of Agriculture. Thus nobody has included the effects of increasing the use of glyphosate in the risk/benefit analysis carried out. It is yet another example of how regulatory authorities supposedly protecting public health have failed to implement the 'precautionary principle' with respect to GMOs.'

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**Glyphosate, Part 1: Toxicology**

By Caroline Cox

*Published in Journal of Pesticide Reform*, Volume 15, Number 3, Fall 1995

http://terrazul.org/Archivo/Glyphosate\_Fact\_Sheets.pdf

Excerpts:

“Glyphosate-containing products are acutely toxic to animals, including humans. Symptoms include eye and skin irritation, cardiac depression, gastrointestinal pain, vomiting, and accumulation of excess fluid in the lungs. The surfactant used in a common glyphosate product (Roundup) is more acutely toxic than glyphosate itself; the combination of the two is yet more toxic.”

“**Tests done on glyphosate to meet registration requirements have been associated with fraudulent practices**.”

“**Laboratory fraud first made headlines in 1983 when EPA publicly announced that a 1976 audit had discovered "serious deficiencies and improprieties" in toxicology studies conducted by Industrial Biotest Laboratories (IBT).44 Problems included "countless deaths of rats and mice that were not reported," "fabricated data tables," and "routine falsification of data." “44**

“IBT was one of the largest laboratories performing tests in support of pesticide registrations.**44** About 30 tests on glyphosate and glyphosate-containing products were performed by IBT, including 11 of the 19 chronic toxicology studies.**45** A compelling example of the poor quality of IBT data comes from an EPA toxicologist who wrote, "It is also somewhat difficult not to doubt the scientific integrity of a study when the IBT stated that it took specimens from the uteri (of male rabbits) for histopathological examination." “**46** (Emphasis added.)

“In 1991, laboratory fraud returned to the headlines when EPA alleged that Craven Laboratories, a company that performed contract studies for 262 pesticide companies including Monsanto, had falsified test results.**47** "Tricks" employed by Craven Labs included "falsifying laboratory notebook entries" and "manually manipulating scientific equipment to produce false reports."**48** Roundup residue studies on plums, potatoes, grapes, and sugarbeets were among the tests in question.” “**49**

“The following year, the owner/president of Craven Laboratories and three employees were indicted on 20 felony counts. A number of other employees agreed to plead guilty on a number of related charges.**50** The owner was sentenced to five years in prison and fined $50,000; Craven Labs was fined 15.5 million dollars, and ordered to pay 3.7 million dollars in restitution.”**48**

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**EPA Investigates Monsanto**

Published by *RACHEL'S HAZARDOUS WASTE NEWS* #400, July 28, 1994

http://www.ejnet.org/rachel/rhwn400.htm

Excerpts:

“An internal memorandum by an official of the U.S. Environmental Protection Agency [EPA], has accused EPA of conducting a "fraudulent" criminal investigation of Monsanto, the St. Louis chemical corporation.

The 30-page memo, from William Sanjour to his supervisor, David Bussard, dated July 20, 1994, describes a two-year-long criminal investigation of Monsanto by EPA's Office of Criminal Investigation (OCI).

The Sanjour memo says EPA opened its investigation on August 20, 1990 and formally closed it on August 7, 1992. "However, the investigation itself and the basis for closing the investigation were fraudulent," the Sanjour memo says.

According to the Sanjour memo:

* EPA's investigation of Monsanto was precipitated by a memo dated February 23, 1990, from EPA's Dr. Cate Jenkins to Raymond Loehr, head of EPA's Science Advisory Board.
* The Jenkins memo said that EPA had set dioxin standards relying on flawed Monsanto-sponsored studies of Monsanto workers exposed to dioxin, studies that had showed no cancer increases among heavily exposed workers.
* Attached to the Jenkins memo was a portion of a legal brief filed by the plaintiffs as part of a trial known as Kemner v. Monsanto, in which a group of citizens in Sturgeon, Missouri had sued Monsanto for alleged injuries they had suffered during a chemical spill caused by a train derailment in 1979.
* The Jenkins memo had not requested a criminal investigation; instead Jenkins had suggested the need for a scientific investigation of Monsanto's dioxin studies. But in August 1990, EPA's Office of Criminal Investigation (OCI) wrote a 7-page memo recommending that a "full field criminal investigation be initiated by OCI."
* Plaintiffs in the Kemner suit made the following kinds of allegations (which we quote verbatim from the Sanjour memo):

“Monsanto failed to notify and lied to its workers about the presence and danger of dioxin in its chlorophenol plant, so that it would not have to bear the expense of changing its manufacturing process or lose customers;...

"Monsanto knowingly dumped 30 to 40 pounds of dioxin a day into the Mississippi River between 1970 and 1977 which could enter the St. Louis food chain;

"Monsanto lied to EPA that it had no knowledge that its plant effluent contained dioxin;

"Monsanto secretly tested the corpses of people killed by accident in St. Louis for the presence of dioxin and found it in every case;...

"Lysol, a product made from Monsanto's Santophen, was contaminated with dioxin with Monsanto's knowledge." [The Sanjour memo says that, at the time of the contamination, "Lysol (was) recommended for cleaning babies' toys and for other cleaning activities involving human contact."]

"The manufacturer of Lysol was not told about the dioxin by Monsanto for fear of losing his business;

"Other companies using Santophen, who specifically asked about the presence of dioxin, were lied to by Monsanto;...

"Shortly after a spill in the Monsanto chlorophenol plant, OSHA measured dioxin on the plant walls. Monsanto conducted its own measurements, which were higher than OSHA's, but they issued a press release to the public and they lied to OSHA and their workers saying they had failed to confirm OSHA's findings;

**"Exposed Monsanto workers were not told of the presence of dioxin and were not given protective clothing even though the company was aware of the dangers of dioxin;**

**"Even though the Toxic Substances Control Act requires chemical companies to report the presence of hazardous substances in their products to EPA, Monsanto never gave notice and lied to EPA in reports;**

"At one time Monsanto lied to EPA saying that it could not test its products for dioxin because dioxin was too toxic to handle in its labs."...

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# Can A Company That Makes Roundup Be Sustainable?

# By Gina-Marie Cheesman

Published in *TriplePundit*, November 20th, 2009

http://www.triplepundit.com/2009/11/can-a-company-that-makes-roundup-be-sustainable/

Excerpts:

of Glyphosate residue discovered that the inert ingredients in the herbicide (solvents, preservatives, surfactants) increased the toxic effect on human cells. According to the researchers, glyphosate residue can cause birth defects.

“This clearly confirms that the [inert ingredients] in Roundup formulations are not inert. “Moreover, the proprietary mixtures available on the market could cause cell damage and even death [at the] residual levels” found on Roundup-treated crops.”

**“Another study by Argentine scientists also found that glyphosate can cause birth defects at doses considerably lower than what is commonly used on crops, in this case, soybeans. The researchers injected amphibian embryo cells with glyphosate diluted to a concentration 1,500 times less than what is used commercially. The embryos grew into tadpoles with obvious birth defects.”**

“A 2001 study by Swedish oncologists discovered links between non-Hodgkin’s lymphoma and glyphosate. The Swedish researchers found that Swedish people with non-Hodgkin’s lymphoma were 2.3 times more likely to be exposed to glyphosate.

Monsanto spokesperson John Combest defended the safety of Roundup. “Roundup has one of the most extensive human health safety and environmental data packages of any pesticide that’s out there. It’s used in public parks, it’s used to protect schools. There’s been a great deal of study on Roundup, and we’re very proud of its performance.” “

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# MONSANTO RoundUp (glyphosate) Empire causes BIRTH DEFECTS...in amphibian embryos, humans?

*Published by Portland independent media center,* May 3, 2009

http://portland.indymedia.org/en/2009/05/391045.shtml"

Excerpts:

“Over twenty years ago, the dangers of Monsanto's glyphosate as well as its associated GMOs were known scientifically to cause human health difficulties and Swedish researchers years ago in the Journal 'Cancer' noted glyphosate was connected to human cancer. Anyway, many scientists and public health workers researching it were fired. It's a mad empire's rush--the U.S empire and its corporate proxies--to desire (hell, the reality of) to own the world's food and dominate the whole world. It is destroying thousands of years of biodiversity security in the process. And Monsanto's empire of glyphosate is in virtually everything in the USA and worldwide. One foolish company, one corrupt federal government of the USA. Everyone should learn more about Monsanto in the film "The World According to Monsanto." (90 minutes). Monsanto's corporate contract should be revoked for endangering world health and killing off global crop biodiversity of thousands of years of work destroyed in one generation--in the mad rush to dominate the whole world's biodiversity.

**Monsanto and the USA will go down in history as the organizations that caused most biological devastation and human suffering in human history.”**

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**Scientists Reveal Effects of Glyphosate**

By Marcela Valente

Published by *HEALTH-ARGENTINA*, April 15 , 2009

http://www.ipsnews.net/news.asp?idnews=46516

Excerpts:

“BUENOS AIRES, Apr 15 , 2009 (IPS) - Glyphosate, the herbicide used on soybeans in Argentina, causes malformations in amphibian embryos, say scientists here who revealed the findings of a study that has not yet been published.”

"The observed deformations are consistent and systematic," Professor Andrés Carrasco, director of the Laboratory of Molecular Embryology at the University of Buenos Aires medical school and lead researcher on the National Council of Scientific and Technical Research (CONICET), told the Inter Press Service news agency IPS.

Reduced head size, genetic alterations in the central nervous system, an increase in the death of cells that help form the skull, and deformed cartilage were effects that were repeatedly found in the laboratory experiments, said the biologist.

The news was reported Monday by the Argentine newspaper *Página 12*.

**Monsanto’s head of communications in Argentina, Fernanda Pérez Cometto, told IPS that the company has "several studies that show that the herbicide is harmless to humans, animals and the environment."**

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**GM-Soy: Destroy the Earth and Humans for Profit**

By Gregory P Damato, P.h.D.

Published by Fourwinds10.com, May 27, 2009

http://www.fourwinds10.com/siterun\_data/science\_technology/dna\_gmo/news.php?q=1243529527

Excerpts:

“Monsanto created Roundup in the 1970's to kill weeds and has since catapulted this product to be the world's number one selling [herbicide](http://www.naturalnews.com/herbicide.html). Before the patent on Roundup was set to expire in 2000, [Monsanto](http://www.naturalnews.com/Monsanto.html) needed a surefire way to keep the profits of Roundup from bottoming out. Monsanto quickly began purchasing the majority of the world's seed companies while simultaneously creating GMOs that [farmers](http://www.naturalnews.com/farmers.html) needed to sign contractual agreements to only use Roundup. Subsequently, revenue from Roundup never dropped and in fact topped more than $4 billion in 2008, up 59% from 2007 [2].

GM-soy is estimated to be present in up to 70% of all [food](http://www.naturalnews.com/food.html) products found in US supermarkets, including cereals, breads, soymilk, pasta and most meat (as animals are fed GM-soy feed). Although Monsanto has consistently relied on industry-funded data to declare the safety of GM-soy and glyphosate, objective research published in peer-reviewed journals tells another story.

Toxicity of Glyphosate

**A recently published study by Italian researchers [3] examined the** [**toxicity**](http://www.naturalnews.com/toxicity.html) **of four popular glyphosate based herbicide formulations on human placental cells, kidney cells, embryonic cells and neonate umbilical cord cells and surprisingly found total cell death of each of these cells within 24 hours. The researchers reported several mechanisms by which the herbicides caused the cells to die including: cell membrane rupture and damage, mitochondrial damage and cell asphyxia**. Following these findings, the researchers tested G, AMPA and POEA by themselves and concluded that, "It is very clear that if G, POEA, or AMPA has a small toxic effect on embryonic cells alone at low levels, the combination of two of them at the same final concentration is significantly deleterious.”

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# Patents Trump Public Interest in Monsanto's Ag Empire - Special Report: Are Regulators Dropping the Ball on Biocrops?”

By Carey Gillam

Published by *Reuters*, April 13, 2010

https://archive.globalpolicy.org/social-and-economic-policy/world-hunger/agribusiness-companies/48941.html

Excerpts:

“ "The U.S. response (to questions about biotech crop safety) has been an extremely patronizing one. They say 'We know best, trust us,'" added Gurian-Sherman, now a senior scientist at the Union of Concerned Scientists, a nonprofit environmental group.”

“So far, that confidence has been lacking. Courts have cited regulators for failing to do their jobs properly and advisers and auditors have sought sweeping changes.”

“The developers of these crop technologies, including Monsanto and its chief rival DuPont, tightly curtail independent scientists from conducting their own studies. Because the companies patent their genetic alterations, outsiders are barred from testing the biotech seeds without company approvals.”

“**The agreements disallow any research that is not first approved by the companies. "No truly independent research can be legally conducted on many critical questions regarding the technology," the scientists said in their statement.”**

**“Outside researchers have also raised concerns over the years that glyphosate use may be linked to cancer, miscarriages and other health problems in people.”**

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**Mother takes on Monsanto, wins global prize**

By Kristin Schafer

Published in *GroundTruth*, April 13, 2012

Pesticide Action Network North America

http://www.panna.org/blog/mother-takes-monsanto-wins-global-prize

Excerpts:

“When Sofía lost her newborn, she soon realized that such losses were all-too-common in her small community of Ituzaingó Annex. Aerial spraying with Monsanto’s herbicide RoundUp had climbed dramatically in the region as the number of acres planted with the company’s “RoundUp Ready” soy crops grew.

**Sofía and other concerned mothers went door to door collecting stories about health problems in each family — basically conducting the community’s first-ever epidemiological study. “The Mothers of Ituzaingó” discovered the community’s cancer rate to be 41 times the national average, and rates of neurological problems, respiratory diseases and infant mortality were astonishingly high. In response, the mothers launched a “Stop the Spraying!” campaign**.”

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**The Autism Epidemic and Disappearing Bees: A Common Denominator?**

By Brian Moench MD

Published in *Truthout,* April 21, 2012

http://truth-out.org/news/item/8586-the-autism-epidemic-and-disappearing-bees-a-common-denominator

Excerpts:

“But humans are much bigger than insects and the doses to humans are miniscule, right? During critical first trimester development, a human is no bigger than an insect, so there is every reason to believe that pesticides could wreak havoc with the developing brain of a human embryo. But human embryos aren't out in corn fields being sprayed with insecticides and herbicides, are they? **A recent study showed that every human tested had the world's most popular pesticide,** [**Roundup, detectable in their urine**](http://www.ithaka-journal.net/herbizide-im-urin) **at concentrations between five and twenty times the level considered safe for drinking water.**

The autism epidemic and the disappearance of bees are just two of many self-imposed disasters from allowing our world, including Utah, to be overwhelmed by environmental toxins. Environmental protection- including the smallest and most vulnerable among us - is human protection.”

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**Monsanto’s Roundup Ready Crops Leading to Mental Illness, Obesity**

By Mike Barrett

Published by Natural Society, December 15, 2011

http://naturalsociety.com/monsanto-roundup-ready-crops-decreased-gut-flora/

Excerpts:

“A formula seems to have been made to not only ruin the agricultural system, but also compromise the health of millions of people worldwide. With the invent of Monsanto’s Roundup Ready crops, [resistant superweeds](http://naturalsociety.com/monsantos-roundup-superweeds-consuming-4-million-hectares/) are taking over farmland and public health is being attacked. These genetically engineered crops are created to withstand large amounts of Monsanto’s top-selling herbicide, **Roundup. As it turns out, glyphosate, the active ingredient in Roundup, is actually leaving behind its residue on Roundup Ready crops, causing further potential concern for public health.”**

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**Monsanto controls our food, poisons our land, and influences all three branches of government.**

By Jill Richardson

Published online by *Alternet*, April 18, 2013

http://www.alternet.org/food/how-monsanto-went-selling-aspirin-controlling-our-food-supply?paging=off

Excerpts:

“Asked about the harmlessness of Roundup, Lovera replies, “**That’s the PR behind Roundup – how benign it was and you can drink it and there’s nothing to worry about here.**

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**Heavy use of herbicide Roundup linked to health dangers-U.S. study**

By Carey Gillam

Published by *Reuters*, April 25, 2013

http://www.reuters.com/article/2013/04/25/roundup-health-study-idUSL2N0DC22F20130425

Excerpts:

“**Heavy use of the world's most popular herbicide, Roundup, could be linked to a range of health problems and diseases, including Parkinson's, infertility and cancers, according to a new study.**

The peer-reviewed report, published last week in the scientific journal Entropy, said evidence indicates that residues of "glyphosate," the chief ingredient in Roundup weed killer, which is sprayed over millions of acres of crops, has been found in food.

Those residues enhance the damaging effects of other food-borne chemical residues and toxins in the environment to disrupt normal body functions and induce disease, according to the report, authored by Stephanie Seneff, a research scientist at the Massachusetts Institute of Technology, and Anthony Samsel, a retired science consultant from Arthur D. Little, Inc. Samsel is a former private environmental government contractor as well as a member of the Union of Concerned Scientists.”

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**Monsanto’s Roundup Linked to Cancer – Again**

By [Jeff Ritterman](https://truthout.org/authors/jeff-ritterman/)

Published in *Truthout*, October 6, 2014

<https://truthout.org/articles/monsanto-s-roundup-linked-to-cancer/>

Excerpts:

“Roundup seemed, at first, to be the perfect herbicide. It blocks the ESPS synthase enzyme, which prevents the synthesis of amino acids that plants need for growth. Since animals don’t have this enzyme, it was initially hypothesized that they would be safe from Roundup’s effects.

Unfortunately, Roundup has now been shown to affect much more than the EPSP synthase enzyme. **The herbicide has been proven to cause** [**birth defects**](https://truthout.org/opinion/item/25122-exposing-monsanto-herbicide-linked-to-birth-defects-the-vitamin-a-connection) **in vertebrates, including in humans, and it may also be the cause of a fatal** [**kidney disease epidemic.**](https://truthout.org/news/item/24876-monsantos-herbicide-linked-to-fatal-kidney-disease-epidemic-will-ckdu-topple-monsanto)

**An increasing number of studies are now linking the herbicide to cancer**.”

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**Roundup Cancer Study – Published Research**

Published by the firms of Baum Hedlund Aristei & Goldman,2021

Excerpts:

“When scientists study chemicals to determine whether or not they may cause disease, they generally perform one of three different types of testing:

* Animal studies
* Mechanistic studies
* Epidemiological studies

All three types of studies have been conducted by researchers investigating the toxic and carcinogenic (cancer-causing) properties of Roundup weed killer and its active ingredient, glyphosate. Each type is explained below, followed by brief summaries of published studies in that category. **Each summary then links to an expanded discussion of that Roundup cancer study**.”

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**Exposure to Glyphosate Linked to Non-Hodgkin Lymphoma and Multiple Myeloma**

ByLei Wang et al.

Published by the firms of Baum Hedlund Aristei & Goldman

Excerpts:

“In this study, Chinese scientists working at Lerner Research Institute at the Cleveland Clinic in Cleveland, Ohio, found that mice exposed to glyphosate exhibit multiple blood and plasma abnormalities and damage to bodily organs. They also discovered that exposure to glyphosate induced in the mice a biochemical mechanism that is known to play a role in the development of two types of blood cancers: multiple myeloma (MM) and B-cell lymphoma, which accounts for approximately 90% of non-Hodgkin lymphoma (NHL).

It is one thing to find a significant association between a toxic chemical and a disease, such as the link found in this study between glyphosate exposure and kidney and liver damage. **It takes additional evidence to move from there to a conclusion that there is a causative relationship at work—to say the toxin is *causing* the disease.**”

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# Stephens trial drags on, toxicologist testifies about studies of herbicide and cancer risk

By Carey Gillam

Published by US Right to Know, October 25, 2021

Excerpts:

“William Sawyer, a toxicologist and expert witness for plaintiff in her lawsuit against Monsanto, cited scientific research that links use of Monsanto’s glyphosate-based herbicides, including Roundup, to cancer and specifically to NHL. Sawyer has testified in prior Roundup cancer trials, including a 2019 trial that resulted in a jury verdict of more than 2 billion for a husband-and-wife who both suffered from NHL.”

# “Juries in the first three trials found in favor of the plaintiffs, agreeing with claims that Monsanto’s glyphosate-based weed killers, such as Roundup, cause non-Hodgkin lymphoma and Monsanto spent decades covering up the risks, and failing to warn users.”

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**Monsanto can hire the best attorneys**

**Money can buy and**

**still they loose.**

**Monsanto’s Court Loss --- August 2018**

“In July 2018, Dewayne Johnson (a former school groundskeeper) was diagnosed with non-Hodgkin’s lymphoma. He sued Monsanto alleging the chemical glyphosate (an ingredient in Roundup).caused his cancer. Mr. Johnson used Roundup as part of his job. On **August 10, 2018** a jury in San Francisco delivered a verdict in Mr. Johnson’s favor. The judge ordered Monsanto to pay Mr. Johnson **$289 million in total damages**.”

Here’s a link to the verdict:

https://www.law.com/therecorder/2018/07/09/san-francisco-jurors-hear-hours-of-scientific-data-about-herbicides-link-to-cancer/?slreturn=20180713081135

**Monsanto’s Court Loss --- March 2019**

“On March 27, 2019 a San Francisco jury said Monsanto (now owned by BayerAG) was liable for Mr. Edwin Hardeman’s non-curable cancer called non-Hodgkin lymphoma. The judge ordered Monsanto to pay Mr. Hardeman **$200 million**.”

Here’s a link to the verdict:

https://www.theguardian.com/us-news/2019/mar/05/monsanto-roundup-trial-cancer-weed-killer

# Another Legal Blow to Bayer in Roundup Case as US Solicitor General Weighs In --- May 11, 2022

“The U.S. Solicitor General on Tuesday dealt a blow to Monsanto owner Bayer AG, advising the U.S. Supreme Court that it should deny the company’s request for a review of a key Roundup cancer trial loss.”

“Bayer, which bought Monsanto in 2018, filed its petition to the high court in August, asking the court to review the Ninth Circuit Court of Appeals court ruling that affirmed the district court’s judgment in Monsanto’s 2019 trial loss to plaintiff Edwin Hardeman. The jury in the case agreed with Hardeman’s attorneys that exposure to Monsanto’s glyphosate-based herbicide was a cause of Hardeman’s NHL and that Monsanto failed to warn of the risks despite decades of science showing links between the herbicide and cancer.”

Here’s a link to the article:

https://sustainablepulse.com/2022/05/11/another-legal-blow-to-bayer-in-roundup-case-as-us-solicitor-general-weighs-in/?utm\_source=newsletter&utm\_medium=email&utm\_campaign=glyphosate\_gmos\_and\_pesticides\_weekly\_global\_news\_bulletin&utm\_term=2022-06-02" \l ".YpkM9MXMK1s

**Monsanto’s Court Loss --- May 2019**

“On May 13, 2019 a jury in Alameda County California ruled that the couple, Alva and Alberta Pilliod of Livermore, Calif., both contracted non-Hodgkin's lymphoma because of their use of a glyphosate-based herbicide. They were each awarded **$1 billion in punitive damages and an additional $55 million in collective compensatory damages**.”

Here’s a link to the verdict:

https://www.npr.org/2019/05/13/723056453/california-jury-awards-2-billion-to-couple-in-roundup-weed-killer-cancer-trial

**Monsanto’s Court Loss --- June 2020**

“On June 24, 2020 BayerAG was ordered to pay more than **$10 billion** to end tens of thousands of lawsuits filed over its Roundup weedkiller.

The settlement calls for Bayer to pay from $8.8 billion to $9.6 billion to resolve current Roundup lawsuits. The company will also set aside $1.25 billion to fund payouts for potential claims in the future.”

Here’s a link to the verdict:

https://www.npr.org/2020/06/24/882949098/bayer-to-pay-more-than-10-billion-to-resolve-roundup-cancer-lawsuits

**Monsanto Agrees to Plead Guilty --- December 2021**

“Monsanto admitted in a plea agreement filed today that it committed 30 misdemeanor crimes related to the use of a glufosinate ammonium-based product sold under the brand name Forfeit 280. After using the product in 2020 on corn fields on Oahu, Monsanto allowed workers to enter the fields during a six-day “restricted-entry interval” (REI) after the product was applied.

The plea agreement calls for Monsanto to serve three years of probation, pay a total of **$12 million** and continue for another three years a comprehensive environmental compliance program that includes third-party auditor.”

Here’s a link to the information:

http://www.hawaiifreepress.com/Articles-Main/ID/29742/Monsanto-Agrees-to-Plead-Guilty-to-Illegally-Using-Pesticide-at-Corn-Growing-Fields-in-Hawaii

**Court Orders Health Canada To Reassess Safety of Roundup ---- February 11, 2022**

“Canadian regulators must conduct a new review of the safety of Roundup weed killer products, following a court’s decision that they did not follow their own rules in granting the glyphosate-based herbicide approval.”

“In response to the growing concerns over the safety of Roundup, new restrictions and bans have been imposed in many countries, and a number of regulators are reassessing the popular weed killer. It has also led to activists pushing for agencies to take a much harder look at the underlying data about the potential side effects of exposure to glyphosate, the active ingredient.”

Here’s a link to the information:

https://www.aboutlawsuits.com/roundup-safety-review-canada/

**Unsettled - Another Monsanto Roundup Case Heads to Trial --- March 2022**

“Three people suffering from cancer are set to face off against Monsanto in the latest courtroom battle over allegations that exposure to the company’s Roundup weed killer causes non-Hodgkin lymphoma.

“The trial will focus on the complaints of three individuals: Robert Bird, an Iowa man who sprayed Roundup products routinely on a tree farm; Blake Buchan, a 39-year-old Georgia man who used Monsanto’s products to spray fence lines and other areas of two properties he maintained; and Ozie Parker, also of Georgia, who grew up helping out on his family farm, mixing and spraying Roundup weed killers on hundreds of acres for many years.

The plaintiffs allege that Monsanto was well aware of the risks of the active ingredient in its herbicides - a chemical called glyphosate - but hid the risks from consumers, failing to warn them despite scientific evidence showing the cancer-causing potential of the products.”

Here’s a link to the information:

https://www.organicconsumers.org/news/unsettled-another-monsanto-roundup-case-heads-trial

**Monsanto seeks "emergency" delay for St. Louis trial, Match 24, 2022**

“Monsanto on Thursday asked a St. Louis judge to delay the start of a trial over claims brought by three men alleging exposure to Monsanto’s glyphosate-based herbicides, such as the popular Roundup brand, caused them to develop non-Hodgkin lymphoma.

Opening statements in the case of Neal v. Monsanto are expected next week. But on Thursday morning Monsanto “due to exigent circumstances.” The company did not detail its reasons in the filing.”

https://www.thenewlede.org/wp-content/uploads/2022/03/1722-CC10773-emergency-continuance.pdf

**Court rejects Trump-era EPA finding that weed killer safe, June 17, 2022**

“WASHINGTON -- A federal appeals court on Friday rejected a Trump administration finding that the active ingredient in the weed killer Roundup does not pose a serious risk and is “not likely” to cause cancer in humans

The California-based 9th U.S. Circuit Court of Appeals ordered the Environmental Protection Agency to reexamine its 2020 finding that glyphosate did not pose a risk for people exposed to it by any means — on farms, yards or roadsides or as residue left on food crops.

Glyphosate is the active ingredient in Roundup, the most widely used herbicide in the world. Pharmaceutical giant Bayer, which acquired the herbicide's original producer Monsanto in 2018, is facing thousands of claims from people who say Roundup exposure caused their cancer.”

“Writing for a unanimous three-judge panel, Judge Michelle Friedland said EPA's finding of no risk to human was not supported by substantial evidence.'' She also ruled that EPA fell short of its obligations under the Endangered Species Act by inadequately examining glyphosate’s impact on animal species and vegetation.”

Here are links to the information:

https://abcnews.go.com/Business/wireStory/court-rejects-trump-era-epa-finding-weed-killer-85474509

https://careygillam.substack.com/p/9th-circuit-smacks-epa-down-on-glyphosate

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**Conclusion**

The results of independent, unbiased research on glyphosate-containing herbicides indicate this chemical is causing: birth defects, non-Hodgkin’s lymphoma, mitochondrial damage, cell asphyxia, miscarriages, attention deficit disorder, endocrine disruption, DNA damage, skin tumors, thyroid damage, hairy cell leukemia, Parkinson disease, premature births, decrease in the sperm count, harm to the immune system in fish, death of liver cells, severe reproductive system disruptions and chromosomal damage.

Please read Dan Rather’s September 22, 2011 investigative report about the EPA’s corrupt approval process of man-made chemicals:

http://www.panna.org/blog/dan-rather-pesticides-bees

Ask yourself this. Am I willing to subject animals and/or humans to a painful cancer death based on 10 year-old USFS data provided to them by the Monsanto Corporation? Any reasonable land manager would never apply this herbicide given the evidence.