Glyphosate Herbicide Endocrine Disrupting Effects

Moms Across America

Presentation by Zen Honeycutt to DARTIC/OEHHA December 10, 2020

MOMS ACROSS AMERICA

Moms Across America requests that OEHHA list glyphosate/herbicides on the **Prop 65** list as endocrine disruptors; causing reproductive damage, miscarriages, birth defects, developmental delays, and more.

Thank you for having the dedication and integrity to do this difficult job. Your work results in a huge contribution to protecting current and future generations of life on our planet.

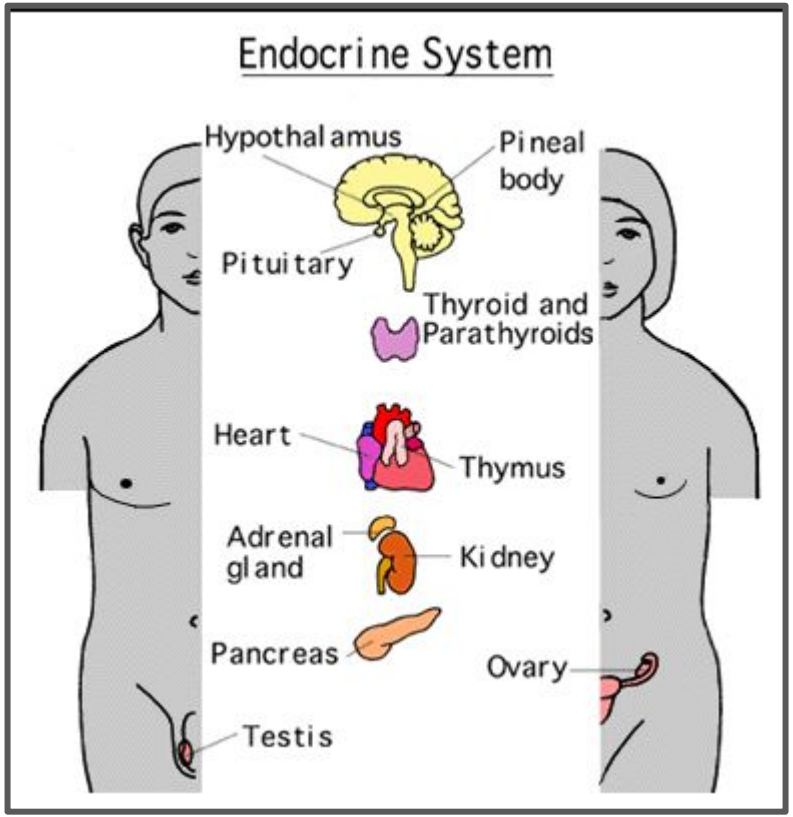
Glyphosate is NEVER used alone!

Therefore we request the OEHHA/ DARTIC review studies that include **glyphosate herbicides full formulation,** and base your decision whether or not to list glyphosate on the CA Prop 65 list as a reproductive effector or endocrine disruptor based on studies that also include the full formulation.

Endocrine disruptors can lead to failure in all systems in the body that are controlled by hormones.

Imbalances and malfunctions of the endocrine system can lead to **diabetes, kidney disease, hypertension, obesity, osteoporosis, Cushing's syndrome, hypo- and hyperthyroidism, infertility, birth defects, erectile dysfunction, cancer (breast, prostate, liver, brain, thyroid, non-Hodgkin's lymphoma), sexual development problems, neurological disorders (learning disabilities, attention deficit disorder, autism, dementia, Alzheimer's, Parkinson's, schizophrenia)** among others. **Endocrine disruptors are especially damaging to growth in fetuses, babies, and children.**

This presentation focuses on issues in blue.



Munoz et al paper on Glyphosate Endocrine Disrupting Capability Review - Summary

- It interacts with or activates hormone receptors
- It alters hormone receptor expression
- It alters signal transduction in hormone-responsive cells
- It induces epigenetic modifications in hormone producing or hormone-responsive cells
- It alters hormone synthesis
- It alters hormone transport across cell membranes
- It alters hormone distribution or circulating levels of hormones
- It alters the fate of hormone-producing or hormone-responsive cells

Endocrine disruptors can cause birth defects, miscarriages, preterm births, developmental delays,infertility, and death.

In 2005, Richard et al. reported that “glyphosate is **toxic to human placental** JEG3 cells within 18 hrs with concentrations lower than those found with agricultural use, and this effect increases with concentration and time or in the presence of Roundup adjuvants.”

In 2009, Mesnage et al. reported **two cases of birth defects in the same family in France after multiple pesticide exposure**. “Many pesticides were used by this family around pregnancies. The father sprayed, without protection, more than 1.3 tons of pesticides per year including 300 liters of **glyphosate based herbicides.**”

In 2009, Winchester et al., reported, “Elevated concentrations of agrichemicals in surface water in April–July coincided with **higher risk of birth defects in live births** with LMPs [last menstrual periods] April–July.”

Glyphosate Herbicides have been shown to impact numerous life forms as an endocrine disruptor.

Rabbits: In 1995 Yousef et al. reported on toxic effects of glyphosate on semen characteristics in rabbits, “Pesticide treatment resulted in a decline in body weight, libido, ejaculate volume, sperm concentration, semen initial fructose and semen osmolality. This was accompanied with increases in the abnormal and dead sperm.”

Amphibians: In 2010, Paganelli et al. injected low doses (lower than levels used in fumigating) of glyphosate into amphibian embryos and recorded brain, intestinal and heart defects in the fetuses. Effects included reduced head size, genetic alterations in the central nervous system, increased death of cells that help form the skull, deformed cartilage, eye defects, and undeveloped kidneys. In addition, the glyphosate was not breaking down in the cells, but was accumulating. According to the authors these results are “completely comparable to what would happen in the development of the human embryo.”

Pigs: A Danish pig farmer reports widespread birth defects, infertility, and low birth rate in pigs fed glyphosate-sprayed grains and a significant reduction when switched to non-glyphosate sprayed grains. (English version).

EPA Assessment Finds Glyphosate Herbicides Harm Endangered Species

Glyphosate Herbicides moderately harm 93% of species and 97% of critical habitats- 1,676 species and 759 critical habitats.

"formulated glyphosate is moderately to highly toxic to fish, highly to very highly toxic to aquatic invertebrates, moderately toxic to mammals, and slightly toxic to birds on an acute exposure basis." - EPA

One of the primary ways glyphosate herbicides harm endangered species is by endocrine disruption.

Glyphosate Herbicides are often sprayed as a drying agent on wheat, grain, and legume crops, affecting farmers.

In 2001, a retrospective cohort study performed by OFFHS in 2.110 Canadian farm women, revealed that **preconception exposures to GBH were associated with a moderate rise in the risk of early abortion.**

(<20 weeks) and an elevated risk of late abortion, regardless of the time in which the exposure occurred (Arbuckle et al.,2001).

New study shows epigenetic effects of increased disease in 3rd and 4th generations.

Glyphosate herbicides runoff into waterways, likely affecting residents of farming communities.

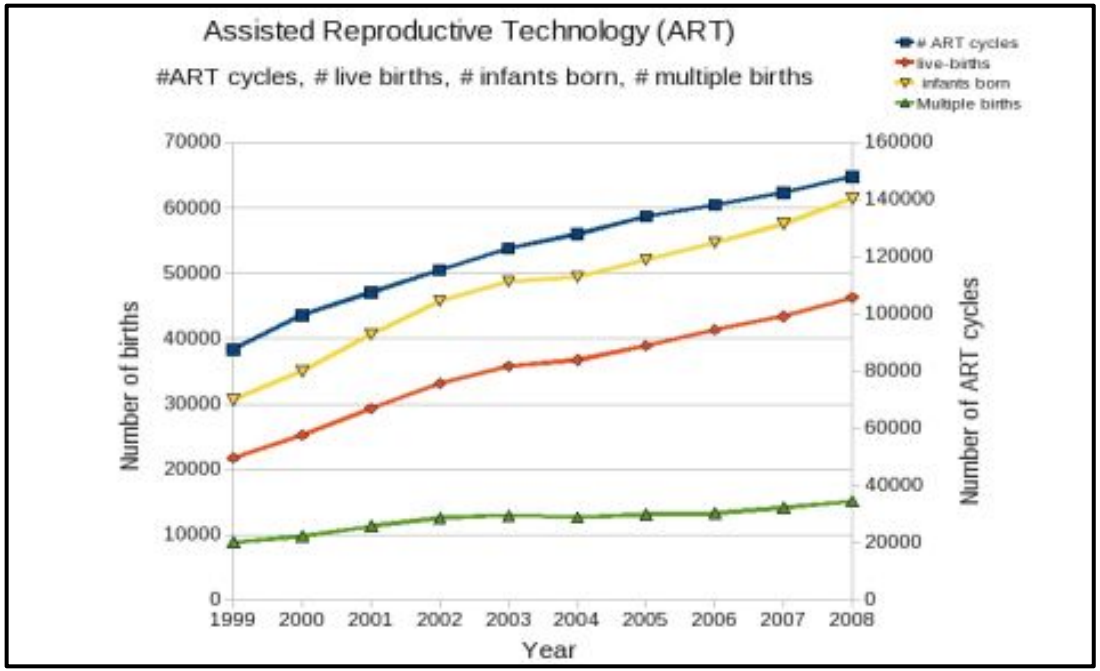
Urine samples from 71 pregnant women and residential drinking water were obtained as a direct measurement of glyphosate exposure. The results showed that women who lived in rural areas had higher glyphosate levels, which were **significantly correlated with shortened gestational lengths**

(r 1⁄4 0.28, p 1⁄4 0.02) (Parvez et al., 2018).

Glyphosate has been detected in human breast milk, dairy, eggs and thousands of US food samples.

American Women are Experiencing Rising Infertility

According to the Centers for Disease Control (CDC), the number of women ages 15-44 with impaired ability to have children is 6.7 million (10.9%). The number of women ages 15-44 who have ever used infertility services is 7.4 million. According to the graph showing results for Assisted Reproductive Technologies (ART), the number of live births resulting from ART increased 113% from 1999 to 2008. Since ART is expensive and not generally covered by medical insurance, infertility issues affect many more people than this graph shows. -Swanson data up to 2008.



Glyphosate Triggers Aggressive Luminal B Breast Cancer. Study link

Glyphosate Primes Mammary Cells for Tumorigenesis by Reprogramming the Epigenome in a TET3-Dependent Manner

Manon Duforestel[1,2,3,4†], Arulraj Nadaradjane[1,2,3,4†], Gwenola Bougras-Cartron[1,2,3,4†], Joséphine Briand[1,2,3,4†], Christophe Olivier[1,2,5], Jean-Sébastien Frenel[1,2,3,4†], François M. Vallette[1,2,3,4†], Sophie A. Lelièvre[6,7] and Pierre-François Cartron[1,2,3,4†]*

Endocrine disruption affects hormone function. Luminal B breast cancer is treated with hormone therapy, showing that hormone disruption is a factor in this fast growing cancer most common in young women.

Perinatal Glyphosate Exposure Leads to Thyroid Disorders in Male Rats

> "Perinatal exposure to GBH in male rats modified the HPT set point, with lower levels of TSH likely reflecting post-translational events. Several genes regulated by TH or involved in TH metabolism and transport presented varying degrees of gene expression alteration that were probably programmed during intrauterine exposure to GBHs and reflects in peripheral metabolism. "(Souza et al 2017)

"The thyroid is an endocrine organ that secretes the thyroid hormone. Thyroid dysfunction has been identified with mood disorders. Depression is frequently associated with low levels of thyroid hormone (hypothyroidism), while mood elevation is often associated with high levels of thyroid hormone (hyperthyroidism). An endocrine disrupting chemical (EDC) can cause erratic behavior."
-Swanson

American Autism Epidemic Now Affects 1 out of 54 Children, 1 out of 34 Boys

RESEARCH ARTICLE

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

Yaoyu Pu, Jun Yang, Lijia Chang, Youge Qu, Siming Wang, Kai Zhang, Zhongwei Xiong, Jiancheng Zhang, Yunfei Tan, Xingming Wang, Yuko Fujita, Tamaki Ishima, Debin Wang, Sung Hee Hwang, Bruce D. Hammock, and Kenji Hashimoto

PNAS May 26, 2020 117 (21) 11753-11759; first published May 12, 2020; https://doi.org/10.1073/pnas.1922287117

Contributed by Bruce D. Hammock, March 30, 2020 (sent for review January 6, 2020; reviewed by Staci D. Bilbo and Mikhail M. Pletnikov)

Study link.

Mesnage et al study shows: “Liver functional dysfunction resulting from chronic ultra-low dose GBH exposure.”

Open Access | Published: 09 January 2017

Multiomics reveal non-alcoholic fatty liver disease in rats following chronic exposure to an ultra-low dose of Roundup herbicide

Robin Mesnage, George Renney, Gilles-Eric Séralini, Malcolm Ward & Michael N. Antoniou

Scientific Reports **7**, Article number: 39328 (2017) | Cite this article

Glyphosate has been detected in thousands of US food samples.

1 in 4 Canadians and 30 million Americans now have liver disease.

The new epidemic - NAFLD affects 10% of our American children, as young as 8 years old.

Additional studies:

- Roundup and Endocrine Disruption of Female Fertility
- Glyphosate causes disease to be transfer through sperm and eggs
- Glyphosate harm to testes
- Perinatal exposure to a glyphosate-based herbicide impairs female reproductive outcomes and induces second-generation adverse effects in Wistar rats
- Maternal Exposure to Glyphosate and Shortened Gestation
- Glyphosate and Anencephaly: Death by A Thousand Cuts
- Seneff and Nigh Paper on Death by a Thousand Cuts: Glyphosate and Anencephaly
- Perinatal exposure to Glyphosate based herbicides and thyroid disorders
- Effects of a glyphosate-based herbicide on the uterus of adult ovariectomized rats
- Neonatal exposure to a glyphosate-based herbicide alters the development of the rat uterus
- Co-formulants of glyphosate herbicides are endocrine disruptors
- Glyphosate Damage on Human and Embryonic and Placental Cells
- Glyphosate, Pig Feed and Miscarriages Study, Kruger, Pedersen etc
- Carrasco Teratogenic Effects Glyphosate of Glyphosate on Vertebrates (Deformities)
- Maternal glyphosate exposure causes autism-like behaviors in offspring through increased expression of soluble epoxide hydrolase
- Glyphosate Can Trigger Aggressive Breast Cancer - Disrupts Methylation

Acknowledgements

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Future generations are dependent on the generosity and integrity of scientists like them and the OEHHA staff. Thank you!