GLYPHOSATE: FAKE NEWS?

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GLYPHOSATE NEWS: SHOULD WE BE WORRIED?

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CNN Health » Food | Fitness | Wellness | Parenting | Vital Signs Live TV U.S. Edition +

Jurors give $289 million to a man they say got cancer from Monsanto's Roundup weedkiller

By Holly Yan, CNN
Updated 9:28 PM ET, Sat August 11, 2018

Judge reads final verdict in Monsanto case 01:32

More from CNN

Reality star Lyric McHenry dies at 26

Camping for the first time in Airstream's tiny new luxury trailer

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WEED KILLER INGREDIENT FOUND IN CHEERIOS, QUAKER OATS AND OTHER BREAKFAST CEREALS

BY **CAMMY HARBISON** ON 8/15/18 AT 11:59 PM

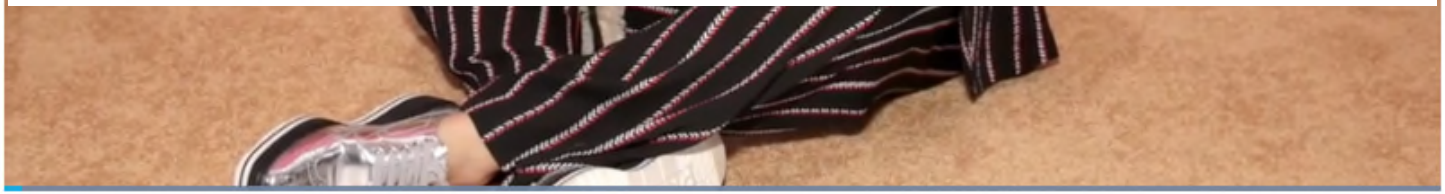
Fri, Aug 17, 2018

Newsweek

RETAIL • PET FOOD

A $5 Million Lawsuit Claims Rachael Ray's Dog Food Brand Contains a Potentially Harmful Ingredient

A man from New York is suing Rachael Ray's "natural" dog food brand, Nutrish, for allegedly containing the "potentially harmful" herbicide glyphosate. In the $5 million class action lawsuit, Bronx resident Markeith Parks argues that it is deceiving for Nutrish to market its food as natural.



ISSUES WITH GLYPHOSATE

GMO crops
Anti GMO/Monsanto movement
Cancer
Health related concerns (gut bioflora)
Environmental Concerns

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Today's Seminar about glyphosate

A. Increased usage
B. Chemical properties
C. Toxicity
D. Cancer data
E. Risk and regulators
F. How to make sense of it all

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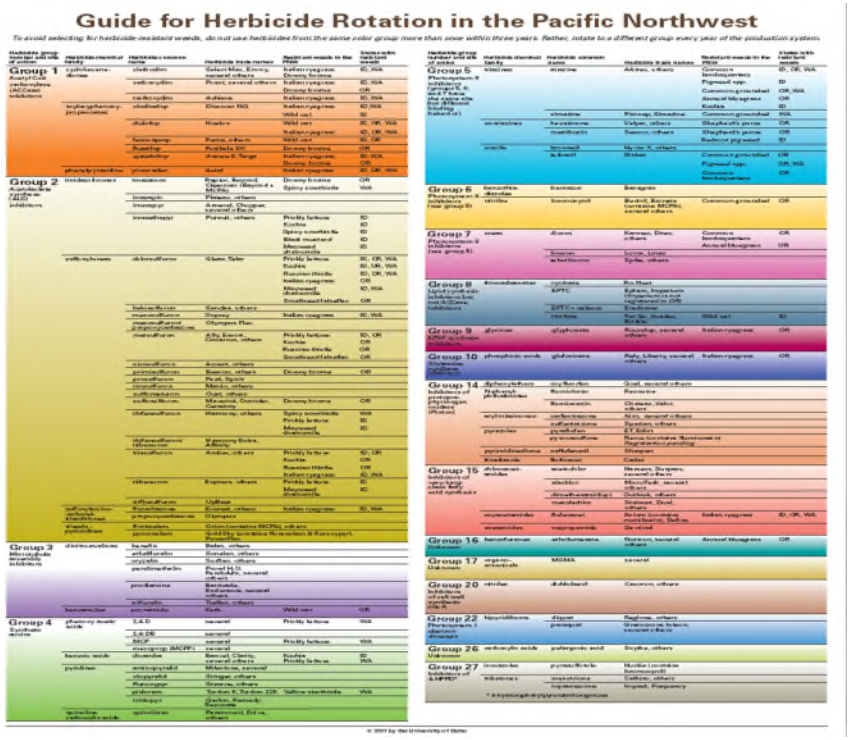
Increased Usage

- As glyphosate usage goes up so does resistance risk
- Kochia in Treasure Valley
- Labeled for use in more than 40 crops or sites
- Pre-emergence (clean sweep) applications in non RR crops
- Non crop



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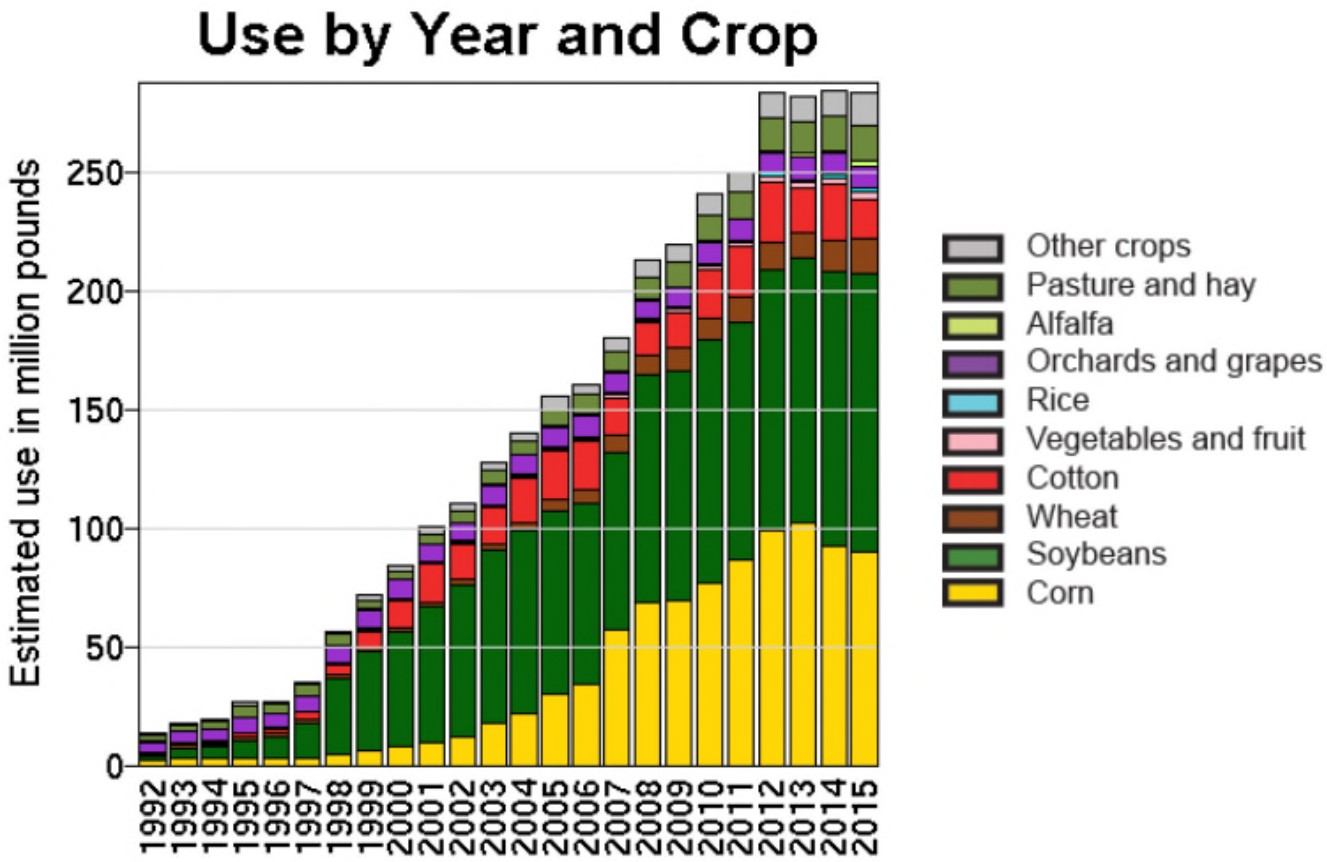

U.S. Department of the Interior | U.S. Geological Survey
URL: http://water.usgs.gov/nawqa/pnsp/usage/maps/show_map.php?year=2012
Page Contact Information: gs-w_nawqa_whq@usgs.gov
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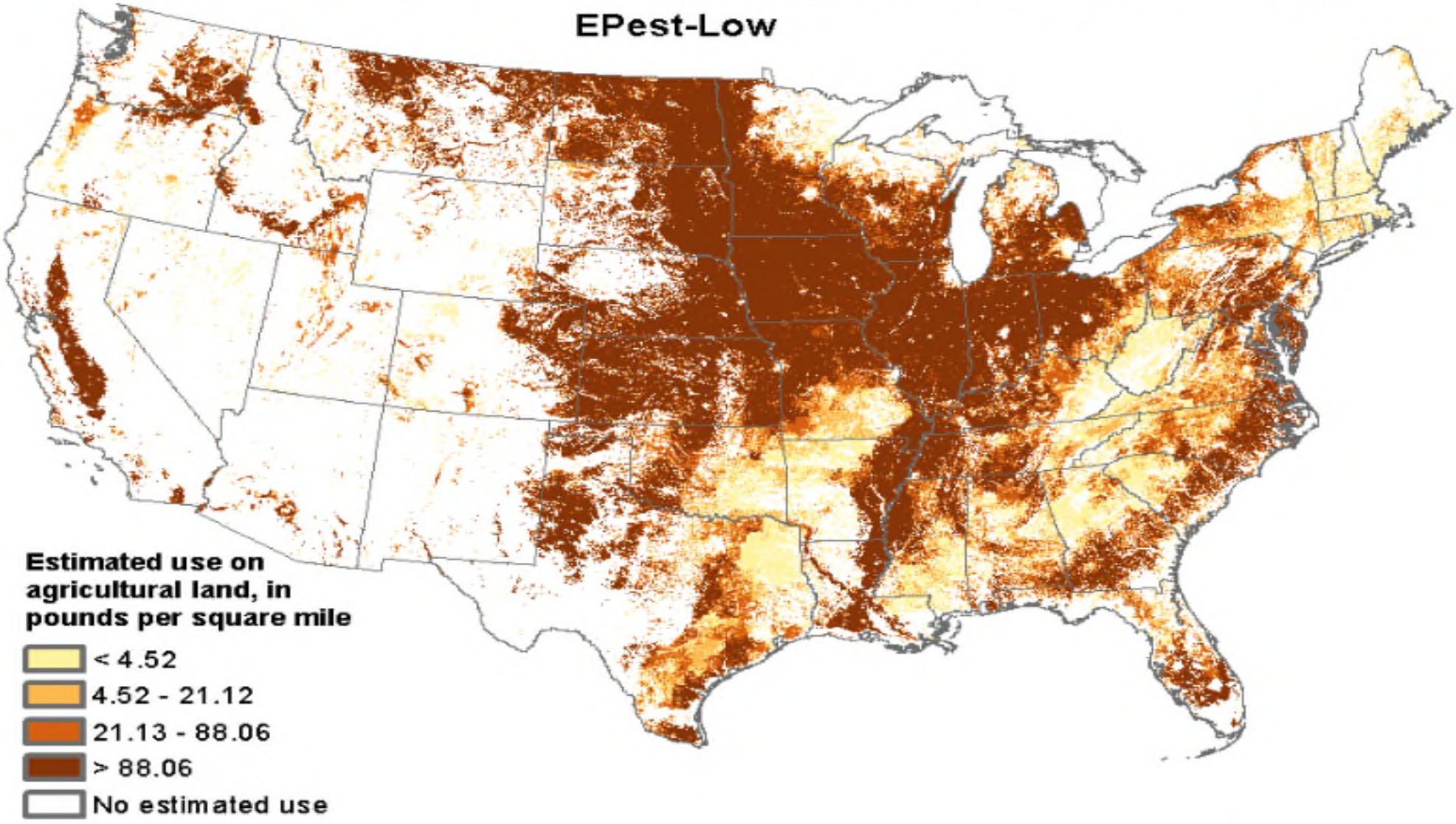
Estimated Agricultural Use for Glyphosate , 2015 (Preliminary)

EPest-Low



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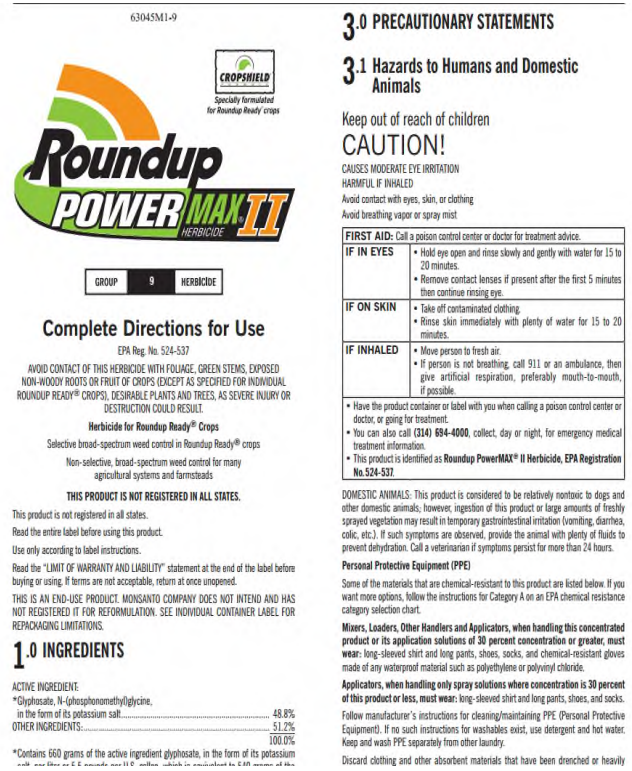
Chemical Properties

- Glyphosate is “dirt loving”
- It is NOT volatile
- Mode of action: Inhibits the enzyme that builds protein in the plant. EPSP
- Plants cannot produce all of the proteins they need
- It takes several days for the weeds to die
- EPSP has NO function in animals
- May by used by some bacteria—we’ll get back to this later!



63045M1-9

CROPSHIELD
Specialty formulated for Roundup Ready® crops

Roundup POWERMAX II HERBICIDE

GROUP 9 HERBICIDE

Complete Directions for Use

EPA Reg. No. 524-537

AVOID CONTACT OF THIS HERBICIDE WITH FOLIAGE, GREEN STEMS, EXPOSED NON-WOODY ROOTS OR FRUIT OF CROPS (EXCEPT AS SPECIFIED FOR INDIVIDUAL ROUNDUP READY® CROPS), DESIRABLE PLANTS AND TREES, AS SEVERE INJURY OR DESTRUCTION COULD RESULT.

Herbicide for Roundup Ready® Crops

Selective broad-spectrum weed control in Roundup Ready® crops

Non-selective, broad-spectrum weed control for many agricultural systems and farmsteads

THIS PRODUCT IS NOT REGISTERED IN ALL STATES.

This product is not registered in all states.

Read the entire label before using this product.

Use only according to label instructions.

Read the "LIMIT OF WARRANTY AND LIABILITY" statement at the end of the label before buying or using. If terms are not acceptable, return at once unopened.

THIS IS AN END-USE PRODUCT. MONSANTO COMPANY DOES NOT INTEND AND HAS NOT REGISTERED IT FOR REFORMULATION. SEE INDIVIDUAL CONTAINER LABEL FOR REPACKAGING LIMITATIONS.

1.0 INGREDIENTS

ACTIVE INGREDIENT:	
*Glyphosate, N-(phosphonomethyl)glycine, in the form of its potassium salt	48.8%
OTHER INGREDIENTS:	51.2%
	100.0%

*Contains 660 grams of the active ingredient glyphosate, in the form of its potassium

3.0 PRECAUTIONARY STATEMENTS

3.1 Hazards to Humans and Domestic Animals

Keep out of reach of children

CAUTION!

CAUSES MODERATE EYE IRRITATION

HARMFUL IF INHALED

Avoid contact with eyes, skin, or clothing

Avoid breathing vapor or spray mist

FIRST AID: Call a poison control center or doctor for treatment advice.	
IF IN EYES	• Hold eye open and rinse slowly and gently with water for 15 to 20 minutes. • Remove contact lenses if present after the first 5 minutes then continue rinsing eye.
IF ON SKIN	• Take off contaminated clothing. • Rinse skin immediately with plenty of water for 15 to 20 minutes.
IF INHALED	• Move person to fresh air. • If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth, if possible.
• Have the product container or label with you when calling a poison control center or doctor, or going for treatment. • You can also call **(314) 694-4000**, collect, day or night, for emergency medical treatment information. • This product is identified as **Roundup PowerMAX® II Herbicide, EPA Registration No. 524-537.**	

DOMESTIC ANIMALS: This product is considered to be relatively nontoxic to dogs and other domestic animals; however, ingestion of this product or large amounts of freshly sprayed vegetation may result in temporary gastrointestinal irritation (vomiting, diarrhea, colic, etc.). If such symptoms are observed, provide the animal with plenty of fluids to prevent dehydration. Call a veterinarian if symptoms persist for more than 24 hours.

Personal Protective Equipment (PPE)

Some of the materials that are chemical-resistant to this product are listed below. If you want more options, follow the instructions for Category A on an EPA chemical resistance category selection chart.

Mixers, Loaders, Other Handlers and Applicators, when handling this concentrated product or its application solutions of 30 percent concentration or greater, must wear: long-sleeved shirt and long pants, shoes, socks, and chemical-resistant gloves made of any waterproof material such as polyethylene or polyvinyl chloride.

Applicators, when handling only spray solutions where concentration is 30 percent of this product or less, must wear: long-sleeved shirt and long pants, shoes, and socks.

Follow manufacturer's instructions for cleaning/maintaining PPE (Personal Protective Equipment). If no such instructions for washables exist, use detergent and hot water. Keep and wash PPE separately from other laundry.

Discard clothing and other absorbent materials that have been drenched or heavily

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Glyphosate toxicity

It does NOT bioaccumulate
Very little to no dermal (skin) absorption
No inhalation risk
Low toxicity across all species tested
No neurotoxicity
Category III or IV
Dietary exposure tests used assumption of 100% crops treated at highest rate
No detections in mother's milk

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Glyphosate residential uses and risk

EPA determined the risk from residential uses was zero.

Glyphosate has no dermal tox

No inhalation tox

Risk assessment=No risk

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Glyphosate toxicity

Oral

Acute oral LD_{50} in rats is 4,320 ppm (mg/kg body weight)
Acute oral LD_{50} in mice is 10,000 ppm
Acute oral LD_{50} in goats is 3,530 ppm

Dermal

Rabbits is >2,000 ppm with glyphosate acid
Rabbits is >5,000 ppm with the metabolite

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LD_{50} of Some Common Products

Material	LD_{50} (mg/kg)	Material	LD_{50} (mg/kg)
Water	90,000	Sugar	30,000
Citric acid (o.j.)	12,000	Ethanol	7,000
Glyphosate	**5,600**	Baking soda	4,220
Table salt	3,000	Acetaminophen	1,944
Hydrogen peroxide	1,580	Copper sulfate	300
Caffeine	192	Nicotine	50
Vitamin D	10	Botulin	0.00001

Source: http://ei.cornell.edu/teacher/pdf/ATR/ATR_Chapter1_X.pdf

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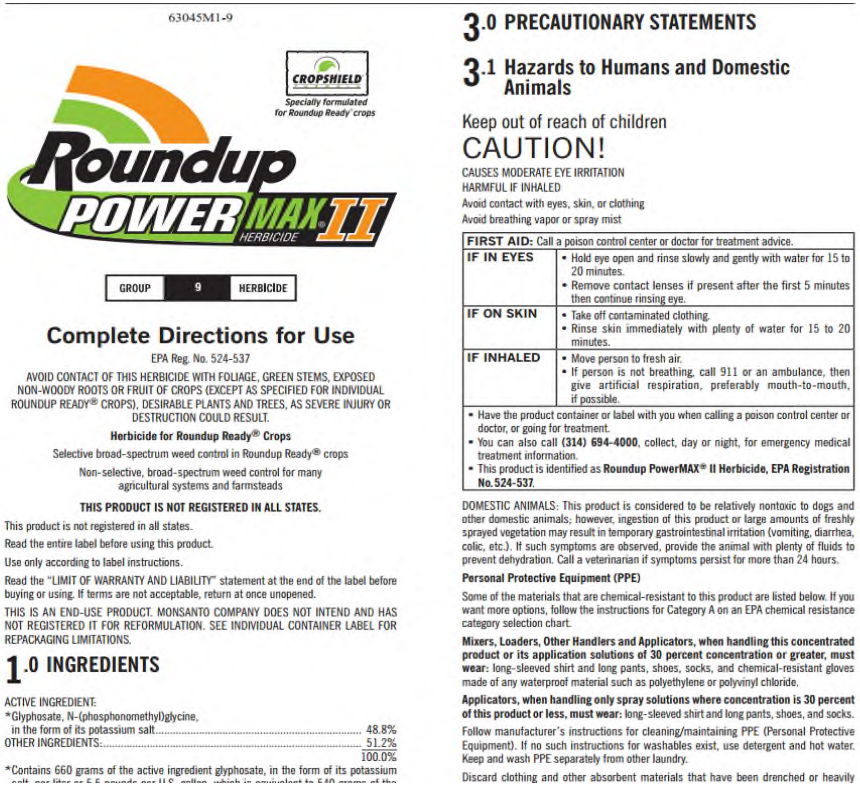
Remember the product label !!

- ✓ Signal word
- ✓ Effects from chemical toxicity
- ✓ PPE
- ✓ Prevents unnecessary exposure



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INTERNATIONAL AGENCY FOR RESEARCH ON CANCER (IARC): PART OF THE WORLD HEALTH ORGANIZATION

6.1 Cancer in humans

There is *limited evidence* in humans for the carcinogenicity of glyphosate. A positive association has been observed for non-Hodgkin lymphoma.

6.2 Cancer in experimental animals

There is *sufficient evidence* in experimental animals for the carcinogenicity of glyphosate.

6.3 Overall evaluation

Glyphosate is *probably carcinogenic to humans (Group 2A).*

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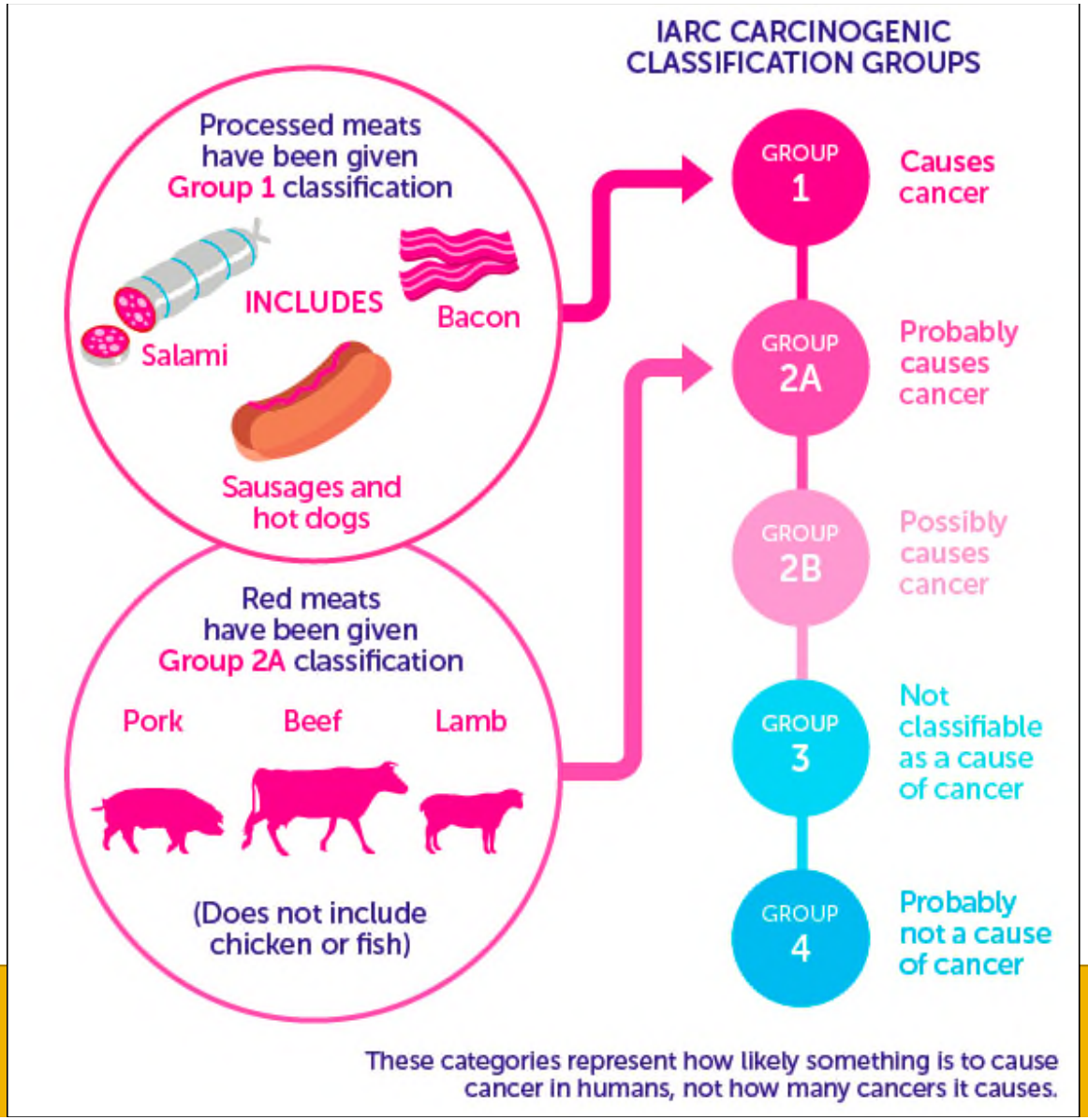

glyphosate

2,4-D

"Odds Ratios"

$$\frac{\text{4 cancers in the population WITH exposure}}{\text{4 cancers in the population with NO exposure}}$$

4/4 = 1

$$\frac{\text{5 cancers in the population WITH exposure}}{\text{4 cancers in the population with NO exposure}}$$

5/4 = 1.25

25% higher risk of cancer with exposure

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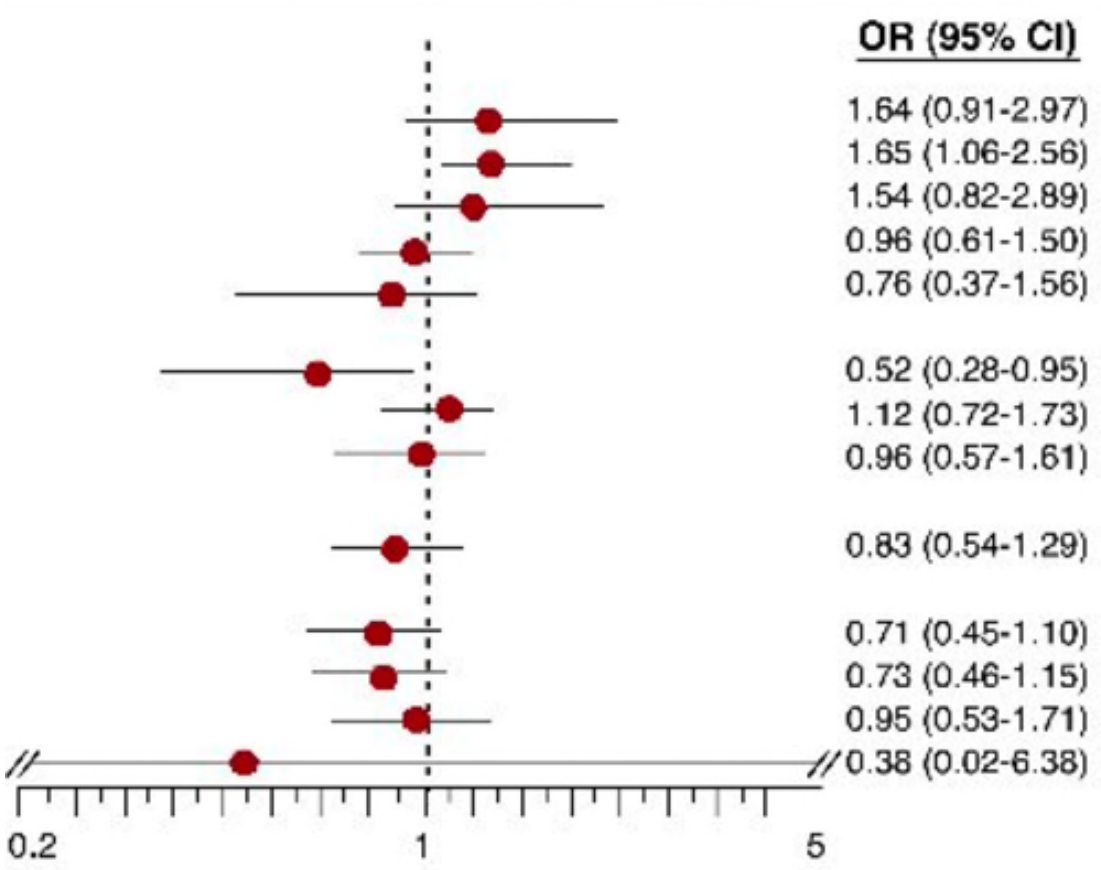

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TRYING TO UNDERSTAND THIS DATA!

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Table 2.2 Case–control studies of leukaemia and lymphoma and exposure to glyphosate

Reference, location, enrolment period	Population size, description, exposure assessment method	Organ site (ICD code)	Exposure category or level	Exposed cases/ deaths	Risk estimate (95% CI)	Covariates controlled
USA						
Brown *et al.* (1990) Iowa and Minnesota, USA 1981–1983	Cases: 578 (340 living, 238 deceased) (response rate, 86%); cancer registry or hospital records Controls: 1245 (820 living, 425 deceased) (response rate, 77–79%); random-digit dialling for those aged < 65 years and Medicare for those aged ≥ 65 years Exposure assessment method: questionnaire	Leukaemia	Any glyphosate	15	0.9 (0.5–1.6)	Age, vital status, state, tobacco use, family history lymphopoietic cancer, high-risk occupations, high risk exposures
Cantor *et al.* (1992) Iowa and Minnesota, USA 1980–1982	Cases: 622 (response rate, 89.0%); Iowa health registry records and Minnesota hospital and pathology records Controls: 1245 (response rate, 76–79%); population-based; no cancer of the lympho-haematopoietic system; frequency-matched to cases by age (5-year group), vital status, state. Random-digit dialling (aged < 65 years); Medicare records (aged ≥ 65 years); state death certificate files (deceased subjects) Exposure assessment method: questionnaire; in-person interview	NHL	Ever handled glyphosate	26	1.1 (0.7–1.9)	Age, vital status, state, smoking status, family history lymphopoietic cancer, high-risk occupations, high-risk exposures

(0.7 – 1.9)

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Table 2.2 (continued)

Reference, location, enrolment period	Population size, description, exposure assessment method	Organ site (ICD code)	Exposure category or level	Exposed cases/ deaths	Risk estimate (95% CI)	Covariates controlled
Brown *et al.* (1993) Iowa, USA 1981–1984	Cases: 173 (response rate, 84%); Iowa health registry Controls: 650 (response rate, 78%); Random-digit dialling (aged < 65 years) and Medicare (aged > 65 years) Exposure assessment method: questionnaire	Multiple myeloma	Any glyphosate	11	1.7 (0.8–3.6)	Age, vital status
De Roos *et al.* (2003) Nebraska, Iowa, Minnesota, Kansas, USA 1979–1986	Cases: 650 (response rate, 74.7%); cancer registries and hospital records Controls: 1933 (response rate, 75.2%); random-digit dialling, Medicare, state mortality files Exposure assessment method: questionnaire; interview (direct or next-of-kin)	NHL	Any glyphosate exposure	36	2.1 (1.1–4)	Age, study area, other pesticides

Table 2.2 (continued)

Reference, location, enrolment period	Population size, description, exposure assessment method	Organ site (ICD code)	Exposure category or level	Exposed cases/ deaths	Risk estimate (95% CI)	Covariates controlled
Lee *et al.* (2004a) Iowa, Minnesota and Nebraska, USA 1980–1986	Cases: 872 (response rate, NR); diagnosed with NHL from 1980 to 1986 Controls: 2381 (response rate, NR); frequency-matched controls Exposure assessment method: questionnaire; information on use of pesticides and history of asthma was based on interviews	NHL	Exposed to glyphosate – non-asthmatics	53	1.4 (0.98–2.1)	Age, vital status,
			Exposed to glyphosate – asthmatics	6	1.2 (0.4–3.3)	
Canada						
McDuffie *et al.* (2001) Canada 1991–1994	Cases: 517 (response rate, 67.1%), from cancer registries and hospitals Controls: 1506 (response rate, 48%); random sample from health insurance and voting records Exposure assessment method: questionnaire, some administered by telephone, some by post	NHL	Exposed to glyphosate	51	1.2 (0.83–1.74)	Age, province of residence
			Unexposed	464	1	
			> 0 and ≤ 2 days	28	1.0 (0.63–1.57)	
			> 2 days	23	2.12 (1.2–3.73)	

✗ (0.98 – 2.1)

✗ (0.4 – 3.3)

✗ (0.83 – 1.74)

✓ (1.2 – 3.73)

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Table 2.2 (continued)

Reference, location, enrolment period	Population size, description, exposure assessment method	Organ site (ICD code)	Exposure category or level	Exposed cases/ deaths	Risk estimate (95% CI)	Covariates controlled
Hardell & Eriksson (1999) Northern and middle Sweden 1987–1990	Cases: 404 (192 deceased) (response rate, 91%); regional cancer registries Controls: 741 (response rate, 84%); live controls matched for age and county were recruited from the national population registry, and deceased cases matched for age and year of death were identified from the national registry for causes of death Exposure assessment method: questionnaire	NHL (ICD-9 200 and 202)	Ever glyphosate – univariate	4	2.3 (0.4–13)	Not specified in the multivariable analysis
			Ever glyp… mu…	NR	5.8 (0.6–54)	
Hardell *et al.* (2002) Sweden; four Northern counties and three counties in mid Sweden 1987–1992	Cases: 515 (response rate, 91% in both studies); Swedish cancer registry Controls: 1141 (response rates, 84% and 83%%); national population registry Exposure assessment method: questionnaire	NHL and HCL	Ever glyphosate exposure (univariate)	8	3.04 (1.08–8.5)	Age, county, study …s, …s in …te analysis
			Ever glyphosate exposure (multivariate)	8	1.85 (0.55–6.2)	

(0.6 – 54)

(1.08 – 8.5)

(0.55 – 6.2)

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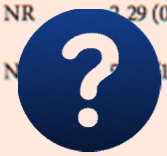
Table 2.2 (continued)

Reference, location, enrolment period	Population size, description, exposure assessment method	Organ site (ICD code)	Exposure category or level	Exposed cases/ deaths	Risk estimate (95% CI)	Covariates controlled
Eriksson *et al.* (2008) Sweden. Four health service areas (Lund, Linkoping, Orebro and Umea) 1999–2002	Cases: 910 (response rate, 91%); incident NHL cases were enrolled from university hospitals Controls: 1016 (response rate, 92%); national population registry Exposure assessment method: questionnaire	NHL	Any glyphosate	29	2.02 (1.1–3.71)	
			Any glyphosate*	29	1.51 (0.77–2.94)	
			≤ 10 days per year use	12	1.69 (0.7–4.07)	
			> 10 days per year use	17	2.36 (1.0–5.37)	
		NHL	1–10 yrs	NR	1.11 (0.24–5.08)	
			> 10 yrs	NR	2.26 (1.16–4.4)	
		B-cell lymphoma	Exposure to glyphosate	NR	1.87 (0.99–3.51)	
		Lymphocytic lymphoma/B-CLL	Exposure to glyphosate	NR	3.35 (1.42–7.89)	
		Diffuse large B-cell lymphoma	Exposure to glyphosate	NR	1.22 (0.44–3.35)	
		Follicular, grade I–III	Exposure to glyphosate	NR	1.89 (0.62–5.79)	
		Other specified B-cell lymphoma	Exposure to glyphosate	NR	1.63 (0.53–4.96)	
		Unspecified B-cell lymphoma	Exposure to glyphosate	NR	1.47 (0.33–6.61)	
		T-cell lymphoma	Exposure to glyphosate	NR	2.29 (0.51–10.4)	
		Unspecified NHL	Exposure to glyphosate	N	1.44–22)	



(1.1 – 3.71)

(0.77 – 2.94)

(0.24 – 5.08)

(1.16 – 4.4)

(1.44 – 22)

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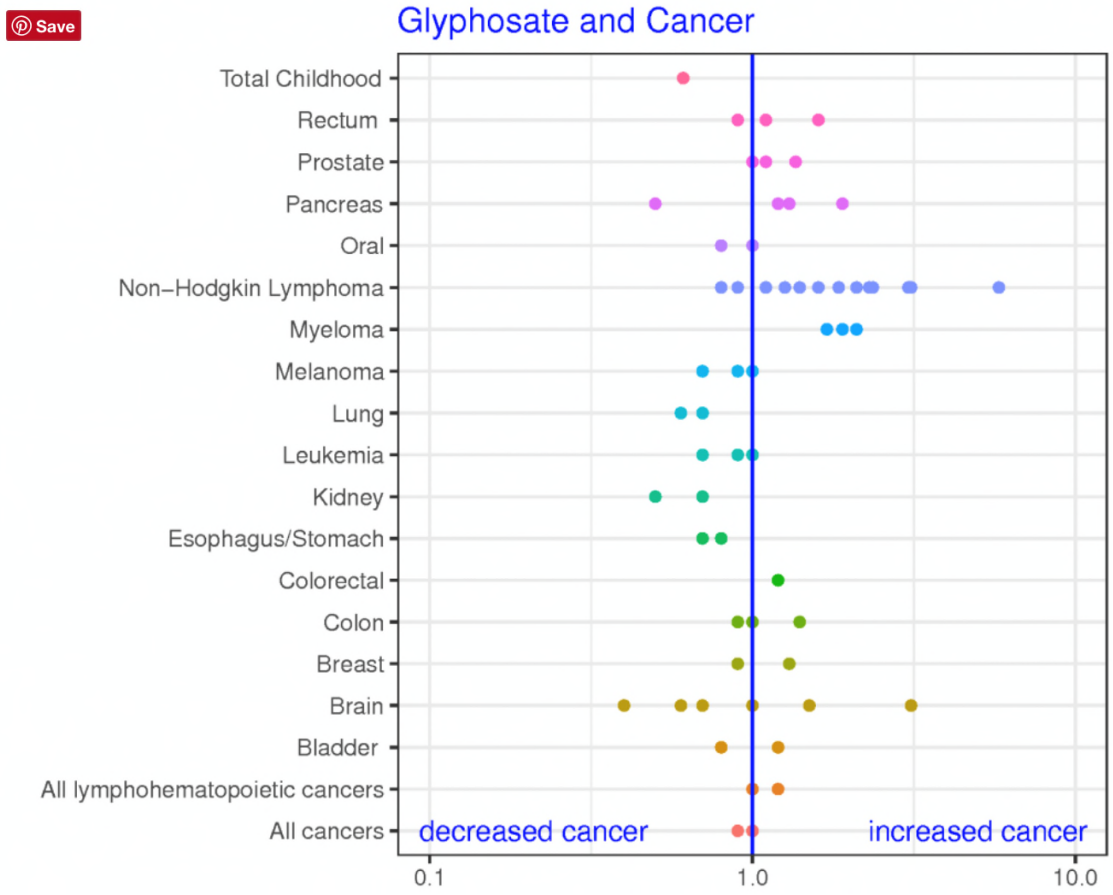

HERBICIDES / RESEARCH

Glyphosate and cancer – revisited

August 11, 2018 - by **Andrew Kniss**

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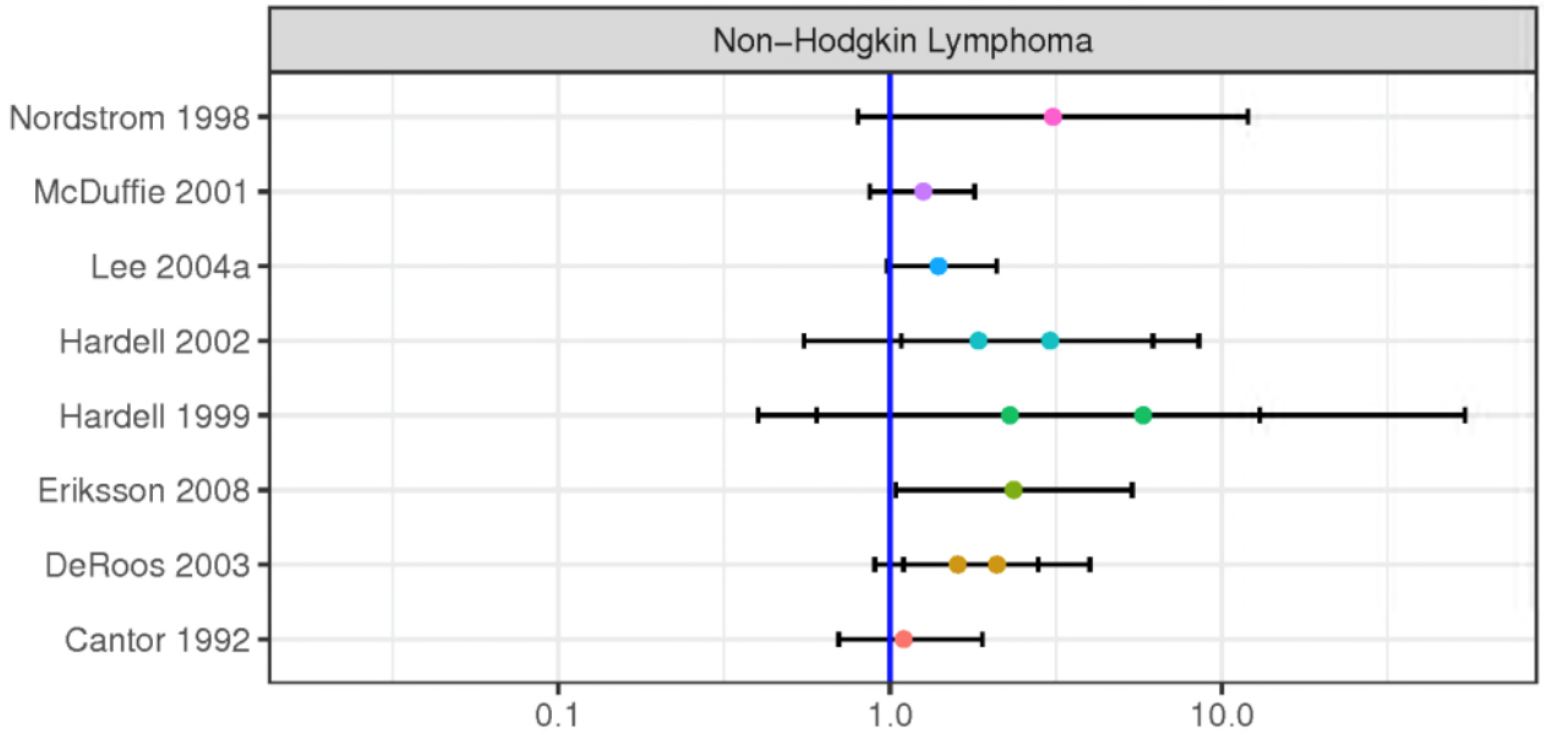

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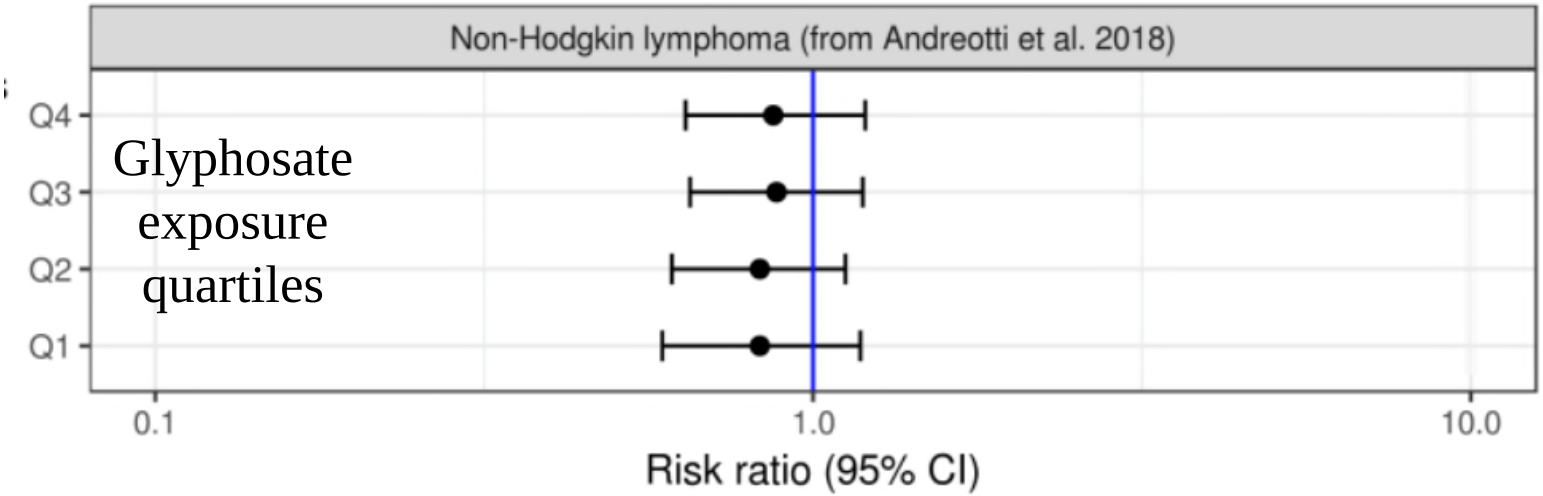

HERBICIDES / RESEARCH

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August 11, 2018 - by Andrew Kniss

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Cancer

- Animal studies have mixed results, but mostly negative.
- A long-term study with over 50,000 applicators found no association with overall cancer rates.
- Epidemiological data show a suggested association with Non-Hodgkins Lymphoma (NHL).
- EPA classification: "Evidence of non-carcinogenicity"
- IARC classification: "Probable carcinogen"

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International Agency for Research on Cancer

World Health Organization

Can it cause cancer?

United States Environmental Protection Agency

Can it cause cancer? + What level of exposure is expected? = Is that exposure level likely to result in cancer?

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RISK = TOXICITY X EXPOSURE

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Environmental Topics | Laws & Regulations | About EPA

EPA Releases Draft Risk Assessments for Glyphosate

For Release: December 18, 2017

CONCLUSIONS:
The draft human health risk assessment concludes that glyphosate is not likely to be carcinogenic to humans.

humans. The Agency's assessment found no other meaningful risks to human health when the product is used according to the pesticide label. The Agency's scientific findings are consistent with the conclusions of science reviews by a number of other countries as well as the 2017 National Institute of Health Agricultural Health Survey.

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Food Safety News
Breaking news for everyone's consumption

EFSA Finds Glyphosate 'Unlikely to Cause Cancer in Humans'

BY DAN FLYNN | NOVEMBER 13, 2015

Europe's gardeners and farmers probably won't have their Monsanto Roundup weed killer or other similar herbicides taken away from them now that the influential European Food Safety Authority (EFSA) has found that the ingredient glyphosate is unlikely to cause cancer in humans.

Glyphosate, which has been around since the 1970s, is used in herbicides around the world, including Monsanto's popular Roundup.

EFSA's research findings appear to trump the conclusion this past March by the International Agency for Research on Cancer (IARC), which listed glyphosate as "probably carcinogenic to humans."

EFSA's assessment will be used by the European Commission in deciding whether to keep glyphosate on the EU list of approved active substances. Currently, glyphosate is widely used in both Roundup and in generic brands of herbicides for home gardening and agriculture.

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News | Spheres of Influence
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RISK PERCEPTION
IT'S PERSONAL
In the face of contradictory information, people must rely on their instincts as much as the facts to size up potential threats. © Corbis
A 276
VOLUME 122 | NUMBER 10 | October 2014 • Environmental Health Perspectives

Risk

Benefits

Risk and Benefits

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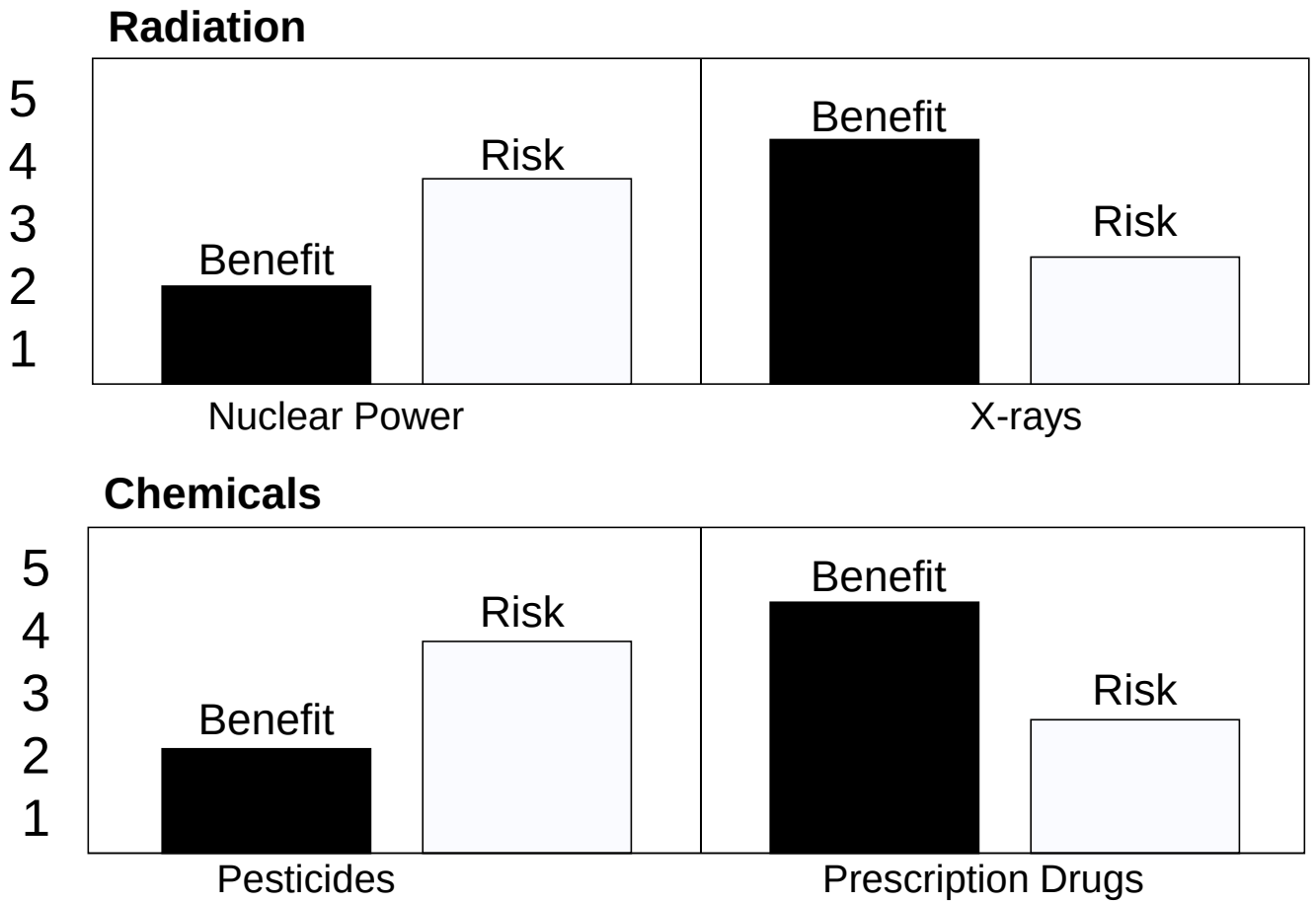

Data are from a national survey in Canada by Slovic et al., 1991.

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Benefits of Pesticide Applications

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Today's Seminar about glyphosate

A. Increased usage
B. Chemical properties
C. Toxicity
D. Cancer data
E. Risk and regulators
F. How to make sense of it all

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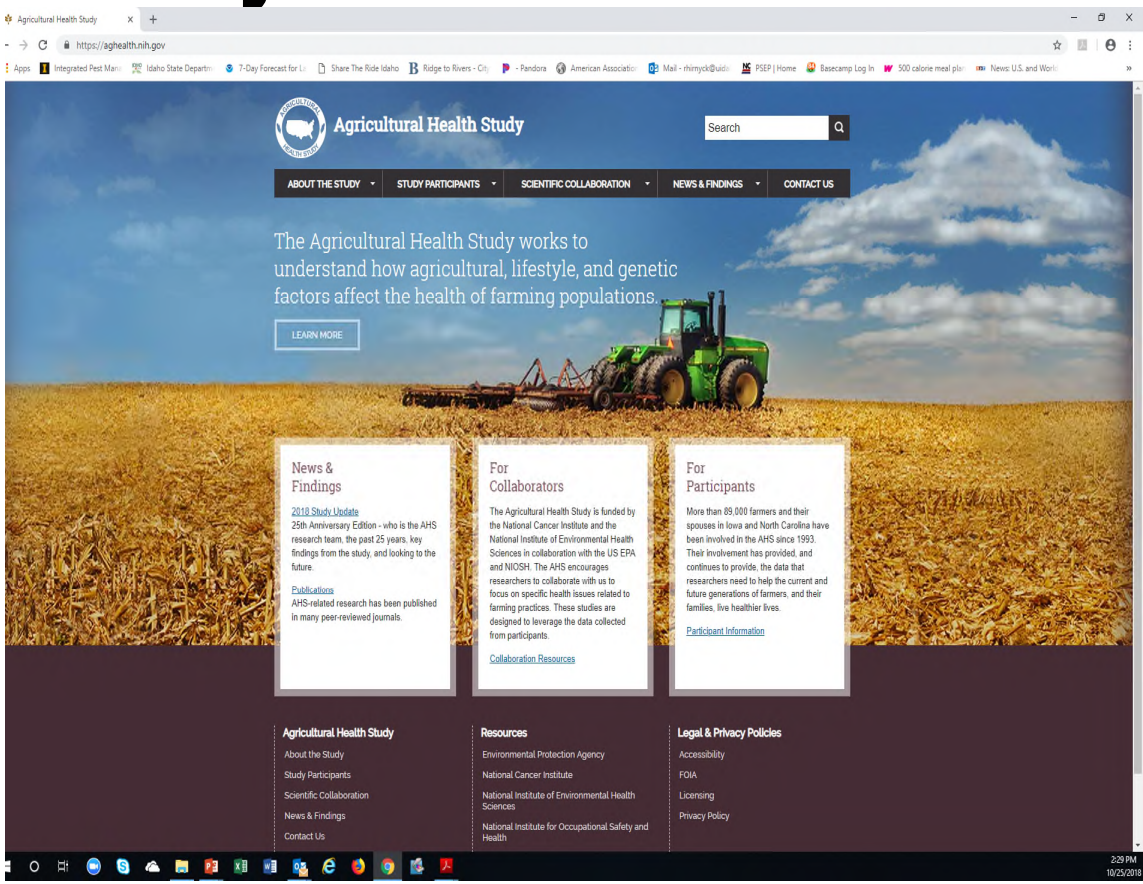
NIH Agricultural Health Study

- 54,000 pesticide applicators
- No associations with NHL cancer—didn't matter how much exposure
- Some studies showed results from fertilizer exposure
- Teased out differences, eg. Smoking, family history of cancer, sleep and diet, etc.



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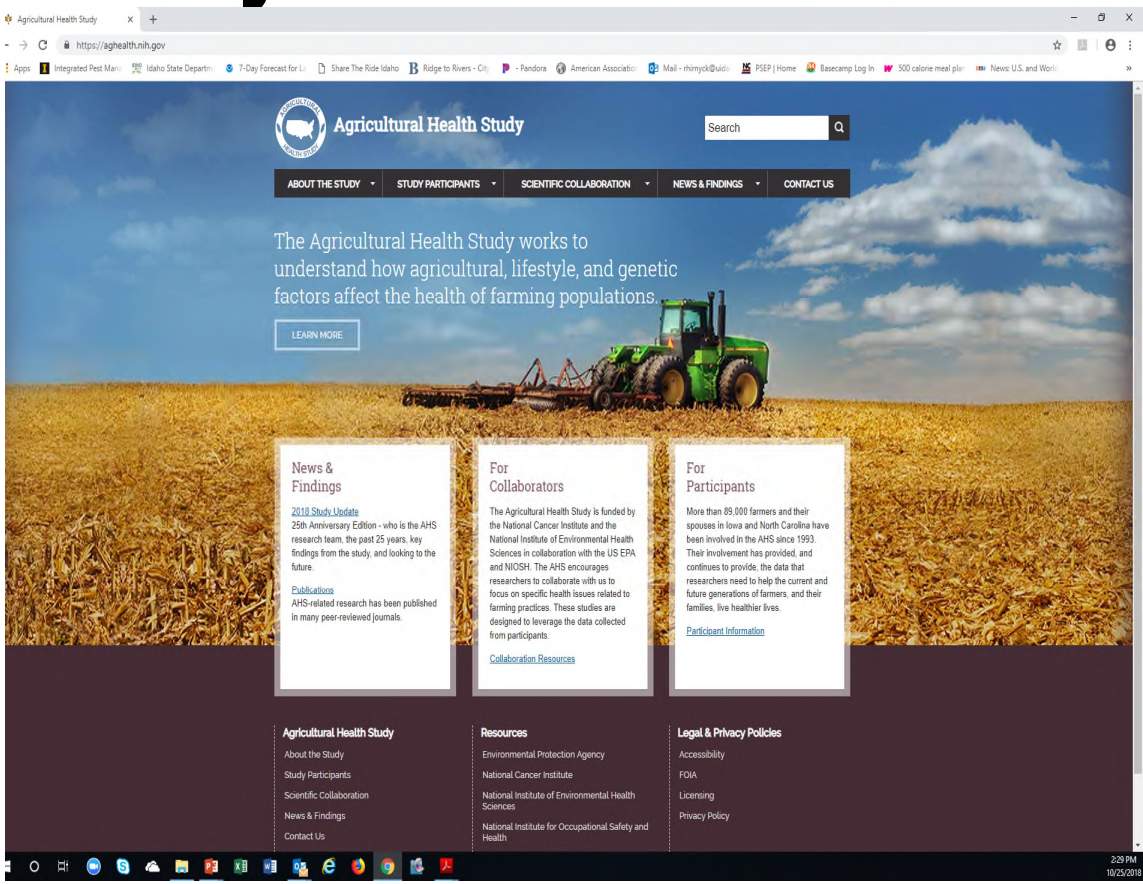
NIH Agricultural Health Study

- Largest study for agricultural health even done
- Most studies use small numbers—data not very strong
- One time measurements—sometimes “looking for glyphosate exposure”
- Agricultural families and workers are exposed to many things
- Still overall, healthier than rest of population



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CNN Health » Food | Fitness | Wellness | Parenting | Vital Signs Live TV U.S. Edition +

Jurors give $289 million to a man they say got cancer from Monsanto's Roundup weedkiller

By Holly Yan, CNN
Updated 9:28 PM ET, Sat August 11, 2018

Judge reads final verdict in Monsanto case 01:32

More from CNN

Reality star Lyric McHenry dies at 26

Camping for the first time in Airstream's tiny new luxury trailer

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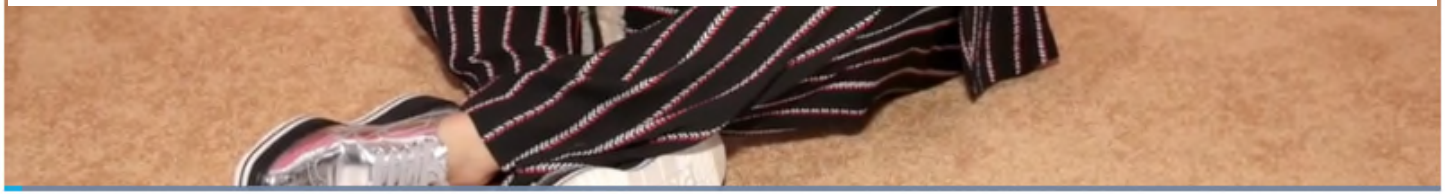
RETAIL • PET FOOD

A $5 Million Lawsuit Claims Rachael Ray's Dog Food Brand Contains a Potentially Harmful Ingredient

A man from New York is suing Rachael Ray's "natural" dog food brand, Nutrish, for allegedly containing the "potentially harmful" herbicide glyphosate. In the $5 million class action lawsuit, Bronx resident Markeith Parks argues that it is deceiving for Nutrish to market its food as natural.



WEED KILLER INGREDIENT FOUND IN CHEERIOS, QUAKER OATS AND OTHER BREAKFAST CEREALS

BY **CAMMY HARBISON** ON 8/15/18 AT 11:59 PM

Fri, Aug 17, 2018

Newsweek

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Glyphosate may be active on gut bioflora

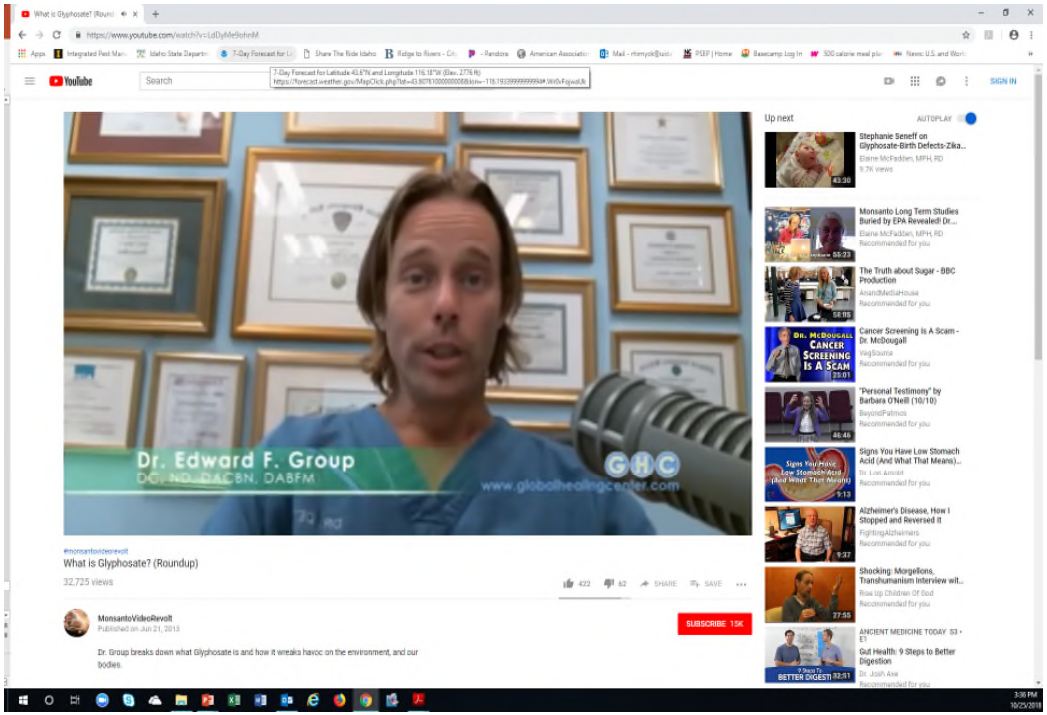
Claims on the internet:

Residues in our diet are killing the bioflora in our gut.

No data, at this time.

This claim has NOT been researched.

May or may not be valid



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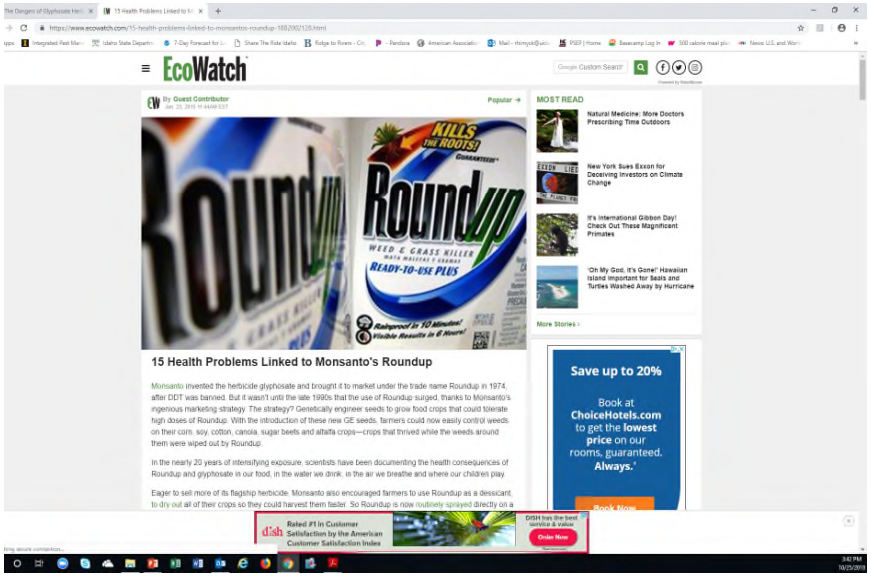
Glyphosate and Social Media

- Most information is myth
- Several “self proclaimed” PhDs
- Many folks are anti-Monsanto
- Emotions run high
- Be sure to use credible sources



“They’ve found that people who are sick have higher levels
Of glyphosate in their bodies than healthy people”
“List of 15 diseases due to glyphosate”

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