Glyphosate Herbicide Pathways To Modern Diseases
Synthetic Amino Acid And Analogue of Glycine
Mis-incorporation Into Diverse Proteins

Mechanisms of Glyphosate associated morbidity (disease) and mortality

Glyphosate disrupts life at the most fundamental level

- Mis-incorporation into peptides and proteins
- Disruption of enzymes and function
- Disruption of hormones i.e. serotonin, testosterone, TH
- Disruption of bacterial symbiosis
- Disruption of amino acid biosynthesis Phe,Tyr,Trp,Met
- Disruption of vitamins and other biomolecules
- Destruction of glands and organs

Glyphosate and Disease

Monsanto long-term Trade Secret studies in mice and rats reveal that Glyphosate destroys the tissues of glands and organs. Tissue destruction leads to gland and organ dysfunction and failure.

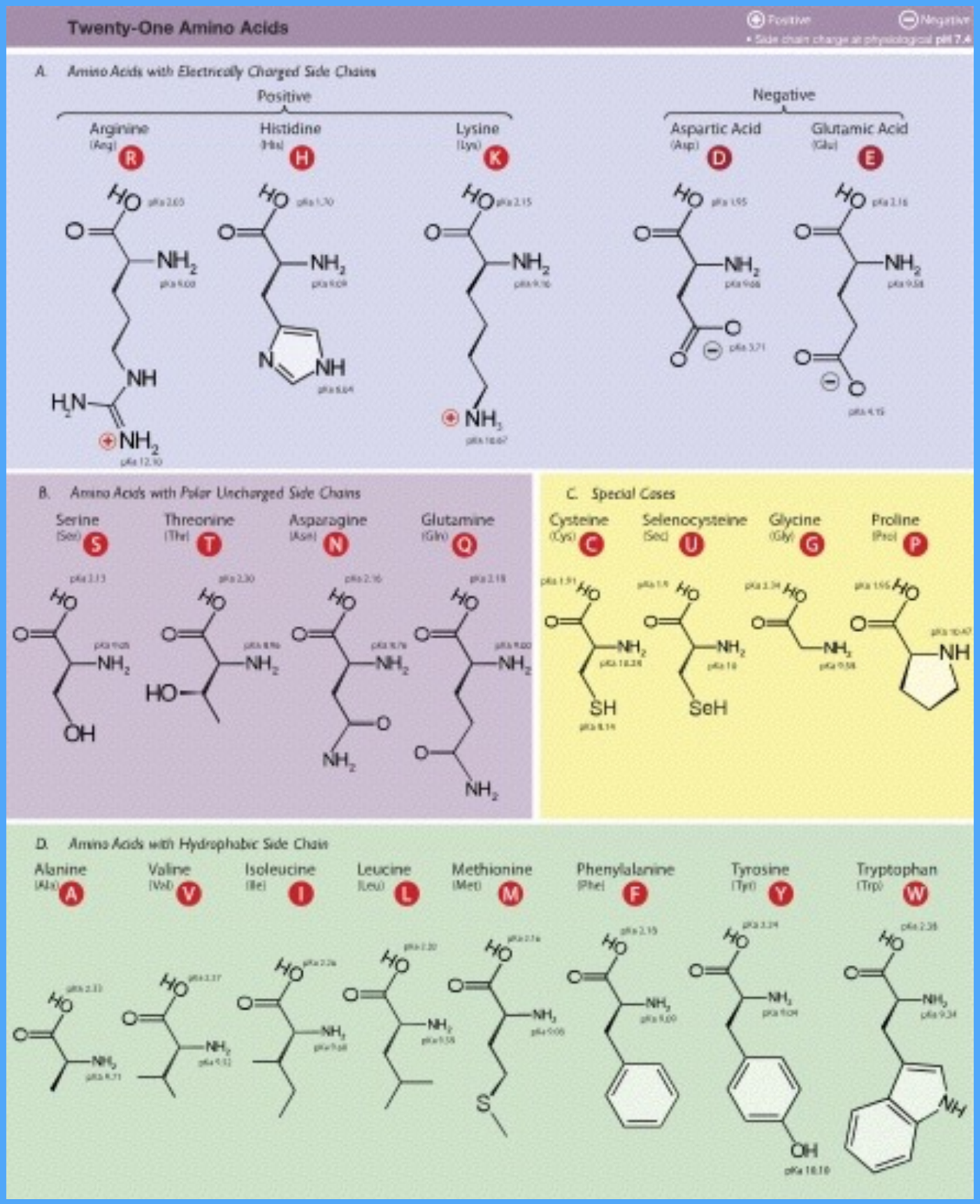
The effect of glyphosate mis-incorporation into diverse proteins leads to disease by mis-folded proteins.

These diseases and increases in diseases include but are not limited to Alzheimer's, ASD, PD other neurological disorders, obesity, diabetes, cataracts, CKD, celiac disease, liver disease, heart disease, lung disease, asthma, deterioration of joints, destruction of teeth, acid reflux, other digestive disorders, birth defects, infertility, sterility, sexual disorders, skin disorders, scleroderma, cancer, lack of vitamins D, B vitamins including cobalamin (B12) and folate, chelation of necessary minerals and more….

- **Glyphosate is a synthetic amino acid**
- **It is a structural analogue of our canonical amino acid Glycine.**
- **It is NOT found in nature**
- **It was created in a laboratory**

- **Synthetic and non-coding amino acids are capable of mis-incorporation into peptides and proteins**
- **Glyphosate forms peptoids due to its structure and like peptides can be incorporated into proteins changing their function**

Our 21 Amino Acids



Amino acids are the building blocks of biology

They determine protein folding, structure and function

Outside of proteins amino acids particularly glycine and glutamine(ate) function as neurotransmitters as well as participate in biosynthesis

Glycine is an amino acid and precursor of our protein structure that makes us who we are.

It is used in the construct of peptides and proteins.

It is a major structural component of our cells and 25% of the amino acid which forms collagen, the main structural protein of the extracellular matrix and our connective tissue.

Collagen is the most abundant protein in our biology. It makes up approximately 25 to 30% of our body's protein.

Our connective tissues, tendons, ligaments, skin, corneas, cartilage, bones, blood vessels, gut, invertebrate discs and dentin of our teeth depend on collagen.

Extracellular matrix

outside of our cells

- ECM an insoluble complex of **proteins and carbohydrates**.
- Secreted by our cells; self assembles outside of the cell

- **Proteins** include: collagens, adhesion proteins (fibronectin, laminin)

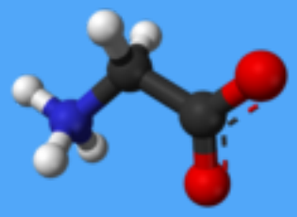
Altered fibronectin has been associated with pathologies, including cancer and fibrosis. Like fibronectin, Laminins are another high-molecular weight proteins of the extracellular matrix. They are a major component of the basal lamina, a protein network foundation for most cells and organs. These comprise the basement membrane. Monsanto pathologists noted frequent destruction of the basement membranes.

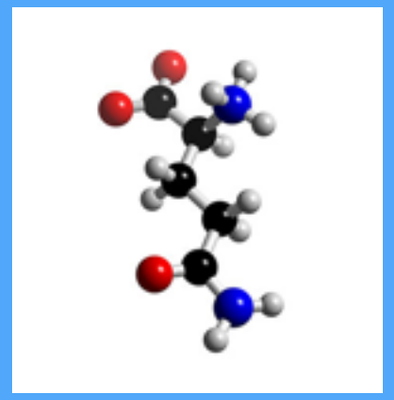
- **Carbohydrates** Include: (a) Proteoglycans (filler substance regulates movement of molecules through the ECM affects stability, activity and signaling

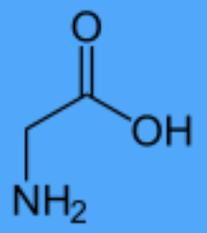
(b) Glycosaminoglycans include heparin sulfate, chondroitin sulfate, keratin sulfate, hyaluronic acid.

HEP regulates cell proliferation, growth, adhesion and developmental processes.
Keratin maintains tissue hydration.
Chondroitin is a structural component of cartilage.
Hyaluronic acid multi-functional as lubricant, promote early inflammation in tissue repair, skin and wound healing. Hyaluronic synthases promote cancer metastasis allow cancer cells to infiltrate the vascular and lymph systems

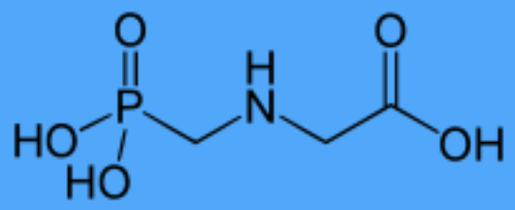
Glyphosate and Glufosinate are Amino Acid Analog Herbicides
Shown here with their corresponding canonical Amino Acids



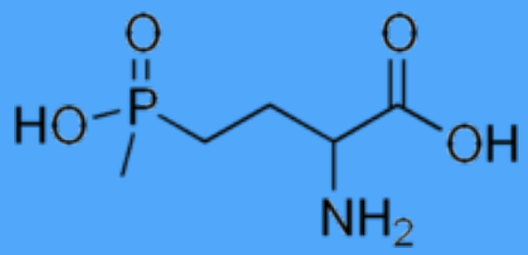




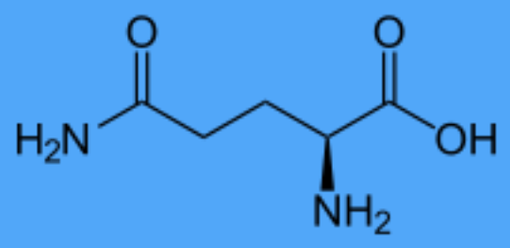
Glycine



Glyphosate
N-(phosphonomethyl)glycine



Glufosinate
2-Amino-4-
(hydroxy(methyl)
phosphonoyl)butanoic
acid



Glutamine can also
sub for Glutamic acid

Mis-incorporation of **synthetic** and **non-coding amino acids** can lead to innumerable health consequences.

Glutamine is found in high levels in skeletal muscle throughout the body. The body normally synthesizes Glutamine, but under stress the body will extract it from the diet, which may have negative consequences with the mis-incorporation of non-canonical amino acids through protein mis-folding

Interstitial diseases of glands and organs are a direct result of the destruction of connective tissue dependent on Glycine.

Monsanto found destruction of the basement membranes of glands and organs including Focal Tubular Dilatation of the Kidneys.

Interstitial lung disease / COPD is another one of those diseases.

Animals in the Monsanto long-term studies had lung related issues with decreased lung function due to destruction of the basement membranes.

Tumors were also found

Test animals were found to exhale radioactive C-14 from their lungs

This demonstrates that some Glyphosate was also being metabolized and utilized in vivo.

What else did Monsanto find ?

Bioaccumulation of C-14 Radio-labelled Glyphosate

Glyphosate mean (ppm)	Group 4 Male / Female	Group 5 Male / Female	Group 6 Male / Female
	BLOOD		
Blood plasma	0.129 / 0.127	0.00158 / 0.00114	0.00178 / 0.00152
Red blood cells	0.517 / 0.275	0.00845 / 0.00424	0.00763 / 0.00474
Whole blood	0.328 / 0.166	0.00454 / 0.00269	0.00476 / 0.00288
Bone	30.6 / 19.7	0.552 / 0.313	0.748 / 0.462
Bone marow	4.10 / 12.50	0.0290 / 0.00639	0.0245 / 0.0231
	GLANDS		
Thyroid	1.50 / 1.24	0.000795 / 0.000358	0.00703 / 0.00955
Testes/ovaries	0.363 / 0.572	0.00276 / 0.00326	0.00529 / 0.00813
	ORGANS		
Brain	0.750 / 0.566	0.00705 / 0.00551	0.0144 / 0.0110
Eye	0.655 / 0.590	0.00215 / 0.000298	0.00405 / 0.00337
Heart	0.590 / 0.518	0.00622 / 0.00398	0.00804 / 0.00632
Kidney	1.94 / 1.35	0.0216 / 0.0132	0.0327 / 0.0196
Liver	1.91 / 1.37	0.0298 / 0.0135	0.0407 / 0.0257
Lung	1.54 / 1.13	0.0148 / 0.0120	0.0211 / 0.0167
Spleen	2.61 / 2.98	0.0119 / 0.00727	0.0155 / 0.0130
Uterus	– / 0.618	– / 0.00517	– / 0.00185
	DIGESTIVE SYSTEM		
Stomach	2.38 / 2.36	0.00795 / 0.00367	0.0377 / 0.0239
Small intestine	1.90 / 1.55	0.216 / 0.0183	0.0441 / 0.0257
Colon	11.0 / 9.20	0.0342 / 0.0159	0.0429 / 0.0298
	FAT/MUSCLE		
Abdominal fat	0.418 / 0.457	0.00364 / 0.00324	0.00557 / 0.00576
Testicular/ovarian fat	0.442 / 0.037	0.00495 / 0.00347	0.00721 / 0.00563
Abdominal muscle	0.262 / 0.214	0.00232 / 0.00160	0.00278 / 0.00216
Shoulder muscle	0.419 / 0.423	0.00388 / 0.00667	0.00783 / 0.00590
Nasal mucosa	1.71 / 1.79	0.00485 / 0.0226	0.0316 / 0.0125
Residual carcass	8.78 / 7.74	0.106 / 0.0870	0.157 / 0.101

Oral Administration of radio-labelled C-14 Glyphosate in Sprague-Dawley Rats

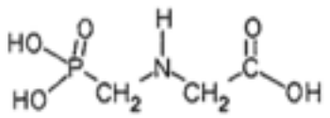
- Group 4 =1000 mg
  single dose
- Group 5= 10 mg
  single dose
- Group 6 =10mg for 14 days before receiving 1 radio-labeled 10 mg dose

Data from MONSANTO study by Ridley & Mirley, 1988

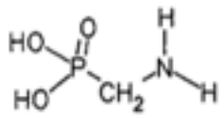
Bioaccumulation of the Glyphosate family amino acids and metabolites were also found by DUPONT in 2007 during studies in chickens and goats during evaluation of there gat gene technology for genetically engineered corn and soy

Radio-labeled C-14 studies were conducted and proteolysis by trypsin and protease were required to free some bioaccumulated and bound glyphosate from proteins

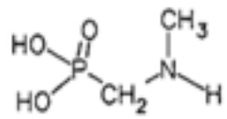
Glyphosate metabolites and reaction products
Six compounds here are Amino Acids



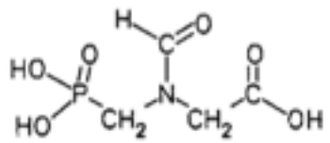
1
glyphosate
N–phosphonomethylglycine



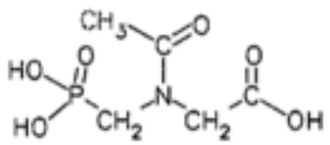
2
aminomethylphosphonic acid
AMPA



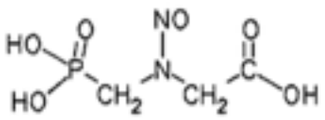
3
N–methylaminomethylphosphonic acid
MAMPA



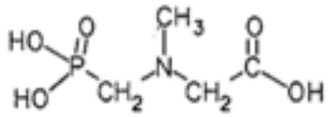
4
N–formylglyphosate
N–formyl–N–phosphonomethylglycine



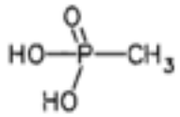
5
N–acetylglyphosate
N–acetyl–N–phosphonomethylglycine



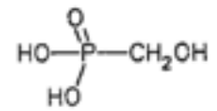
6
N–nitrosoglyphosate
N–nitroso–N–phosphonomethylglycine



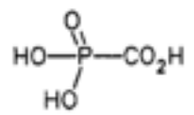
7
N–methylglyphosate
N–methyl–N–phosphonomethylglycine



8
methylphosphonic acid



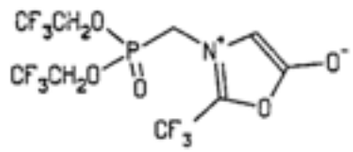
9
hydroxymethylphosphonic acid



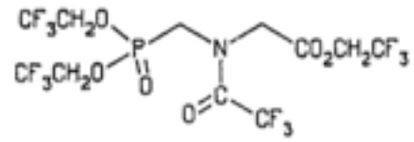
10
phosphonoformic acid

(unknown)

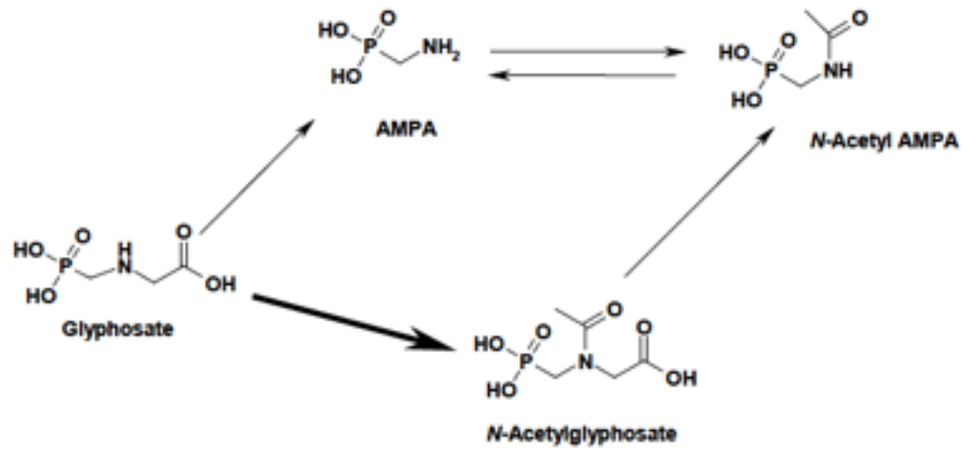
11



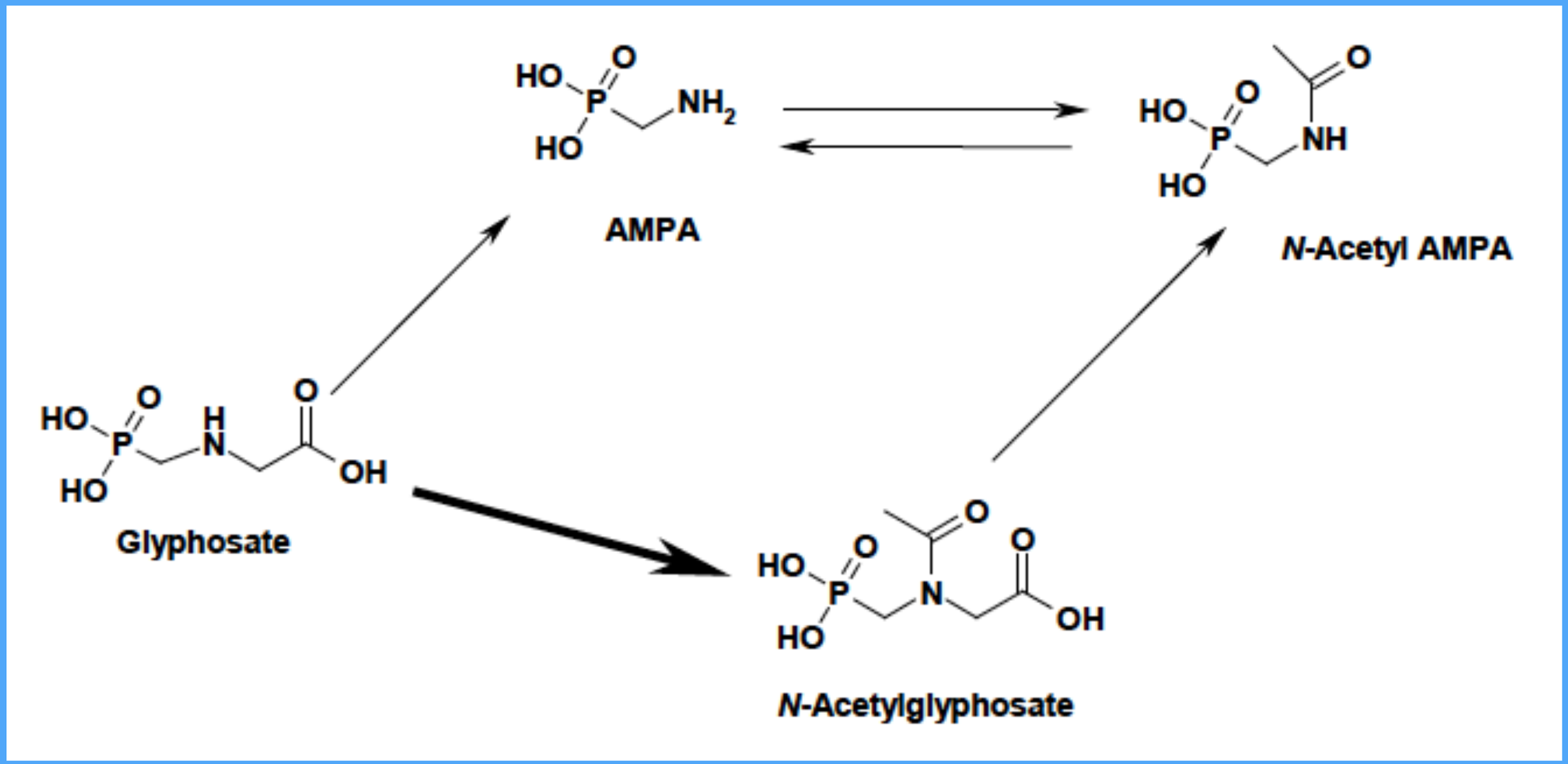
12



13



Glyphosate acetylation, metabolism and recycling (DUPONT 2007)



Highest bioaccumulation of Glyphosate occurs in bone and bone marrow the source of gelatin

My latest laboratory analysis of porcine and bovine gelatins show a problem with the global gelatin supply contaminated by Glyphosate

Gelatin is used in J-ELLO and thousands of products

Fining of apple juice, beer, wine
Pharmaceuticals, gel caps and vitamins
gummy candy, marshmallows, pastries,yogurts,ice creams,dips,cheese cakes, cosmetics
and even VACCINES

Everything I have tested so far containing gelatin is contaminated including the global vaccine supply that uses gelatin

Glyphosate Metabolites and Reaction Products Found in Sprague-Dawley Rat Excreta

Dose group	Glyphosate	AMPA (A)	MAMPA (M)	N-Acetyl-glyphosate	N-Formyl-glyphosate	N-Nitroso-glyphosate	Compound #11
4							
Dose solution	98.88	0.57	0.31	<0.03	0.14	<0.02	0.04
Male urine	97.76	1.25 A+M		0.10	0.20	0.09	0.46
Male faeces	98.64	0.82 A+M		<0.03	<0.04	0.13	0.16
Female urine	97.71	1.39 A+M		<0.05	0.25	0.09	0.33
Female faeces	98.68	0.88 A+M		<0.04	<0.04	0.11	0.17
5							
Dose solution	99.41	0.17	0.00	<0.03	0.18	<0.03	0.03
Male urine	99.05	0.32 A+M		<0.05	0.12	0.11	0.31
Male faeces	98.78	0.56 A+M		<0.06	<0.10	0.21	0.16
Female urine	98.65	0.30 A+M		<0.06	0.25	0.11	0.58
Female faeces	98.23	0.64 A+M		<0.05	<0.09	0.22	0.16
6							
Dose solution	99.36	0.19	0.07	<0.03	0.21	<0.02	<0.02
Male urine	99.24	0.29 A+M		<0.05	<0.11	0.08	0.18
Male faeces	98.31	0.90 A+M		<0.06	<0.10	0.24	0.17
Female urine	98.84	0.26 A+M		<0.04	0.12	0.15	0.51
Female faeces	98.27	0.93 A+M		<0.05	<0.10	0.22	0.23

Data from MONSANTO study by Howe, Chott, and McClanahan 1988

Glyphosate Causes Cataracts All Types

Stout and Rueker 1990

	Sex	Group	No. Examined	No. Affected	% Affected
0	Male	N	15	0	0
2,000		1	22	1	5
8,000		2	18	3	17
20,000		3	20	5	25
0	Female	N	23	0	0
2,000		1	24	0	0
8,000		2	17	1	6
20,000		3	19	2	11

Glyphosate a causal agent in Alzheimer’s Disease

Postmortem studies on Alzheimer's patients revealed that Amyloid beta is also present in the cytosol of cells from the lenses of people with Alzheimer’s disease and that it is associated with cataracts [214]. In fact, amyloid plaques in cataracts and in the brain in Alzheimer's patients were identical. Furthermore, B-Crystallin is found in association with brain plaques and fibrillary tangles in Alzheimer's disease, Creutzfeldt-Jakob, and Parkinson's diseases. Samsel and Seneff, Glyphosate Pathways to Modern Diseases V:Amino Acid Analogue of Glycine in Diverse Proteins

Monsanto's 1990 Stout and Ruecker chronic rat exposure study found significant incidence of y-sutures and other ophthalmic degenerative lens changes caused by glyphosate. The pathologist for the study, Dr. Lionel Rubin, noted in his ophthalmoscopic examination report that: *“There appears to be a dose-related occurrence of cataract affecting male group M3. The type of cataract affecting this group is the diffuse posterior sub-capsular type and to a lesser extent, anterior polar and sutural types."* Displacement of pupils and ocular opacities in the presence of glyphosate were also noted in 1983 by Knezevich and Hogan [29].

Next segment

Why the acceptable “standards” for Glyphosate contamination are not standards of scientific merit and , hence, are moot

Current acceptable standards only assess chemical toxicity

When we discuss the inherent dangers of the biocide Glyphosate, we are not ONLY talking about toxicity here. <u>We are talking about deleteriously altering the fundamental foundations of life itself</u>.

There are no safe levels of glyphosate

Glyphosate functions at the molecular level
Glyphosate is a synthetic amino acid that participates in biology
Glyphosate incorporates into biology
causing mis-folded proteins
Glyphosate destroys the tissues of all glands and organs
Glyphosate becomes a major component of the ECM altering function

Glyphosate and Pancreatic Islet Cell Tumors

Table 4. 1981 Bio/dynamics 26-month glyphosate feeding study [17]: incidence of pancreatic islet cell tumours in male Sprague Dawley rats.

Glyphosate dose /mg kg^{-1} day^{-1}	0	3	10	30
Adenomas	0/50 (0%)	5/49 (10%)	2/50 (4%)	2/50 (4%)
Carcinomas	0/50 (0%)	0/49 (0%)	0/50 (0%)	1/50 (2%)
Adenomas and carcinomas	0/50 (0%)	5/49 (10%)	2/50 (4%)	3/50 (6%)
Hyperplasias	3/50 (6%)	2/49 (4%)	1/50 (2%)	0/50 (0%)

Table 5. 1990 Stout & Rueker 24 month glyphosate feeding study [15]: incidence of pancreatic islet cell tumours in male Sprague Dawley rats.

Glyphosate dose (ppm)	0	2000	8000	20 000
Adenomas	1/43 (2%)	8/45 (18%)	5/49 (10%)	7/48 (15%)
P	0.170	0.018	0.135	0.042
Carcinomas	1/43 (2%)	0/45 (0%)	0/49 (0%)	0/48 (0%)
P	0.159	0.409	0.467	0.472
Adenomas and carcinomas	2/43 (5%)	8/45 (18%)	5/49 (10%)	7/48 (15%)
P	0.241	0.052	0.275	0.108
Hyperplasia	2/43 (5%)	0/45 (0%)	3/49 (6%)	2/48 (4%)
P	0.323	0.236	0.526	0.649

Glyphosate and Thyroid C-Cell Tumors

Table 6. 1990 Stout & Rueker 24 month glyphosate feeding study [15]: incidence of thyroid C-cell tumours in male Sprague Dawley rats.

Glyphosate dose (ppm)	0	2000	8000	20 000
Adenomas	2/54 (4%)	4/55 (7%)	8/58 (14%)	7/58 (12%)
P	0.069	0.348	0.060	0.099
Carcinomas	0/54 (0%)	2/55(4%)	0/58 (0%)	1/58 (2%)
P	0.452	0.252	1.000	0.518
Adenomas and carcinomas	2/54 (4%)	6/55 (11%)	8/58(14%)	8/58 (14%)
P	0.077	0.141	0.060	0.060
Hyperplasia	4/54 (7%)	1/55 (2%)	5/58 (9%)	4/58 (7%)
P	0.312	0.176	0.546	0.601

Table 7. 1990 Stout and Rueker 24 month glyphosate feeding study [15]: incidence of thyroid C-cell tumours in female Sprague Dawley rats.

Glyphosate dose (ppm)	0	2000	8000	20 000
Adenomas	2/57 (4%)	2/60 (3%)	6/59(10%)	6/55 (11%)
P	0.031	0.671	0.147	0.124
Carcinomas	0/57 (0%)	0/60 (0%)	1/59 (2%)	0/55 (0%)
P	0.445	1.000	0.509	1.000
Adenomas and carcinomas	2/57 (4%)	2/60 (3%)	7/59 (12%)	6/55 (11%)
P	0.033	0.671	0.090	0.124
Hyperplasia	10/57 (18%)	5/60 (8%)	7/59 (12%)	4/55 (7%)
P	0.113	0.112	0.274	0.086

Glyphosate causes Low-T and ED

Table 2. 1981 Bio/dynamics 26-month glyphosate feeding study [17]: interstitial cell tumours of the testes in Sprague Dawley rats.

Glyphosate dose /mg kg^{-1} day^{-1}	0	3	10	30
Terminal sacrifice	0/15 (0%)	2/26 (7.69%)	1/16 (6.25%)	4/26 (15.38%)
All animals	0/50 (0%)	3/50 (6%)	1/50 (2%)	6/50 (12%)

Chelation constants of various substances

Table 1. Logarithms of Metal Chelate Formation Constants for Representative Chelators and Glyphosate[a]

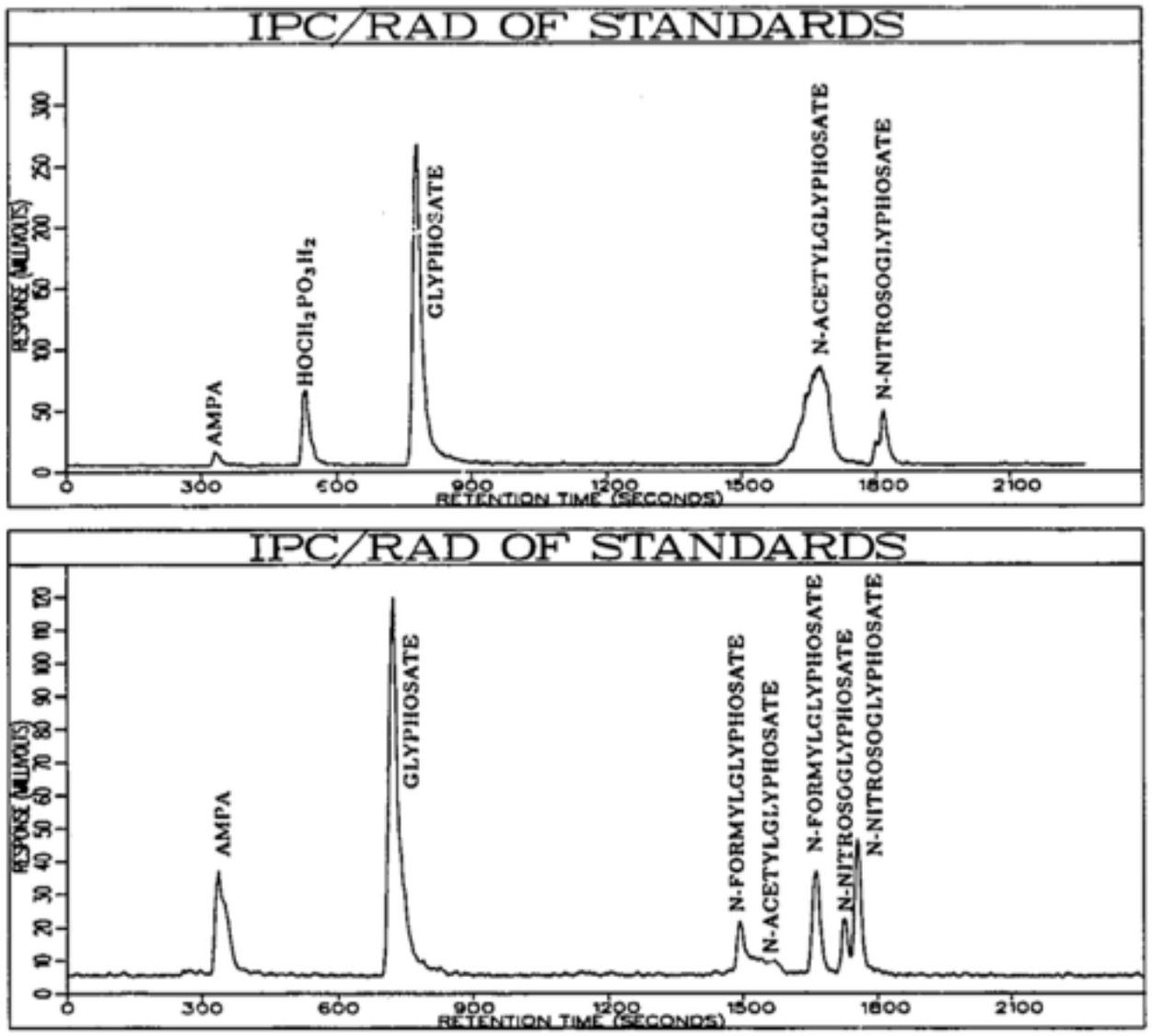
element	EDTA	citrate	glycine	glyphosate	AMPA
Ca^{2+}	12.4	4.9	1.4	3.25	1.62
Cd^{2+}	18.2	5.0	4.4	7.29	5.14
Co^{2+}	18.2	6.3	5.1	7.23	4.58
Cu^{2+}	20.5	10.9	8.6	11.93	8.09
Fe^{2+}	16.0	6.1	4.3	6.87	
Fe^{3+}	27.7	13.2	10.9		
Mg^{2+}	10.6	4.9	2.1	3.31	1.94
Mn^{2+}	15.6	5.0	3.7	5.47	3.62
Ni^{2+}	20.1	6.6	6.2	8.10	5.3
Zn^{2+}	18.2	6.1	5.4	8.74	4.91

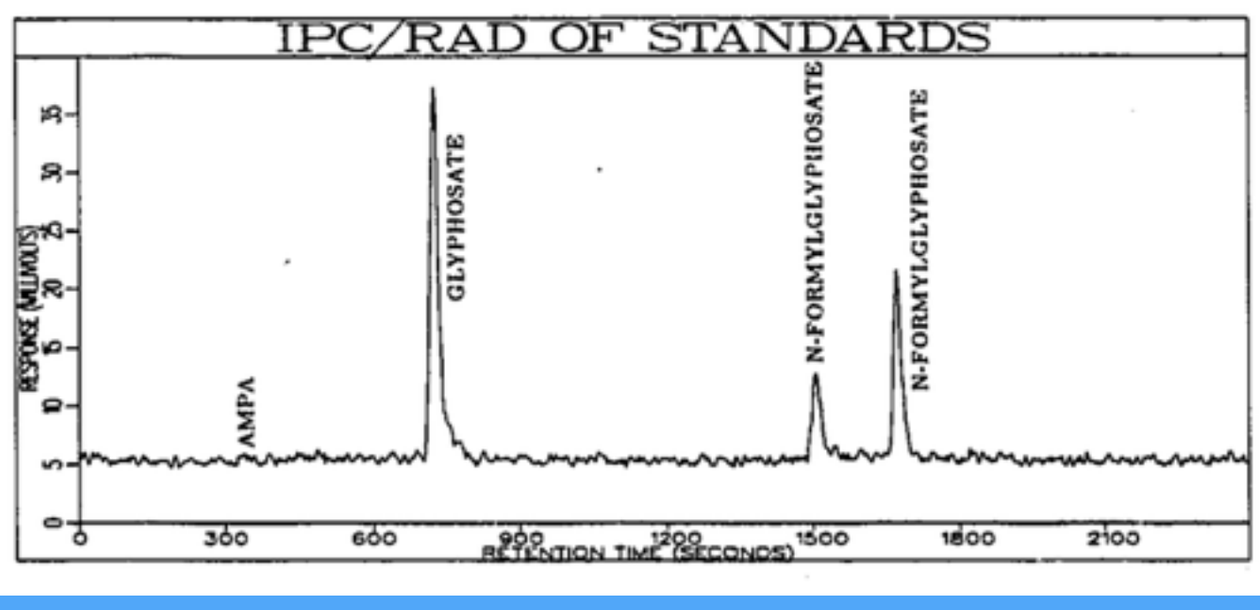
Al +++	16.3	11.7			

Very low stability constant numeric values (between negative values and 1) mean that the metal-ligand is not only soluble in water but readily dissociates into the metal ionic form shown and the ligand, yielding essentially all metal in ionic form at pH as low as stomach acid (about pH 2 to 3) to as high as physiologic pH 7.4 (the pH of the main extracellular body fluids such as serum and lymph). Consequently these metallic ions are available for absorption from the digestive tract and allow life to be sustained in the case of metals that are nutrients, and harm life or terminate life if the metal is a toxin like *Cd* (Cadmium) or promote tissue (brain and bone) injury in the case of biologically absorbable complexes of *Al* (Aluminum).

Ion Pair Chromatography of Glyphosate

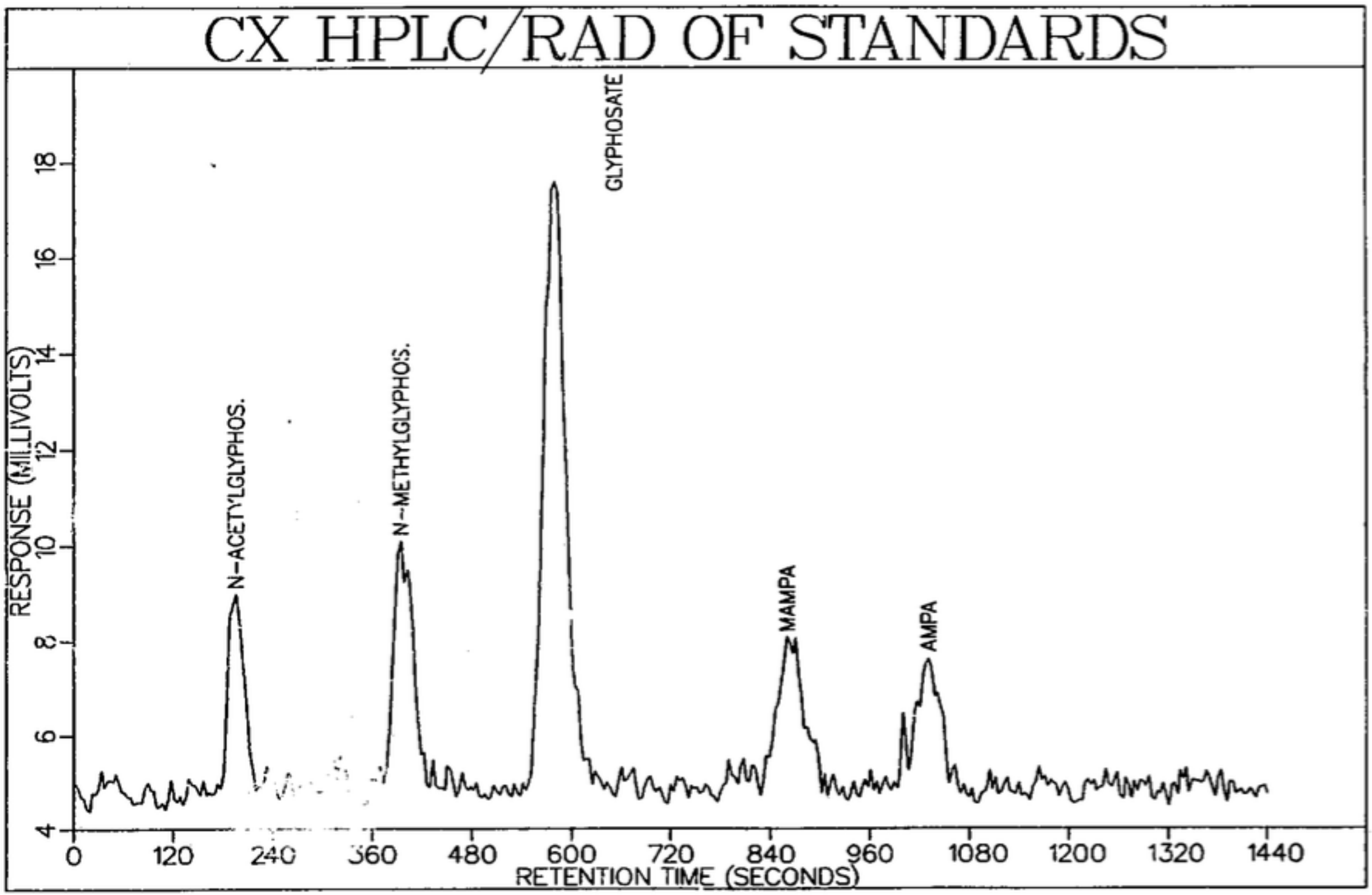
Figure 4: IPC/RAD of Standards



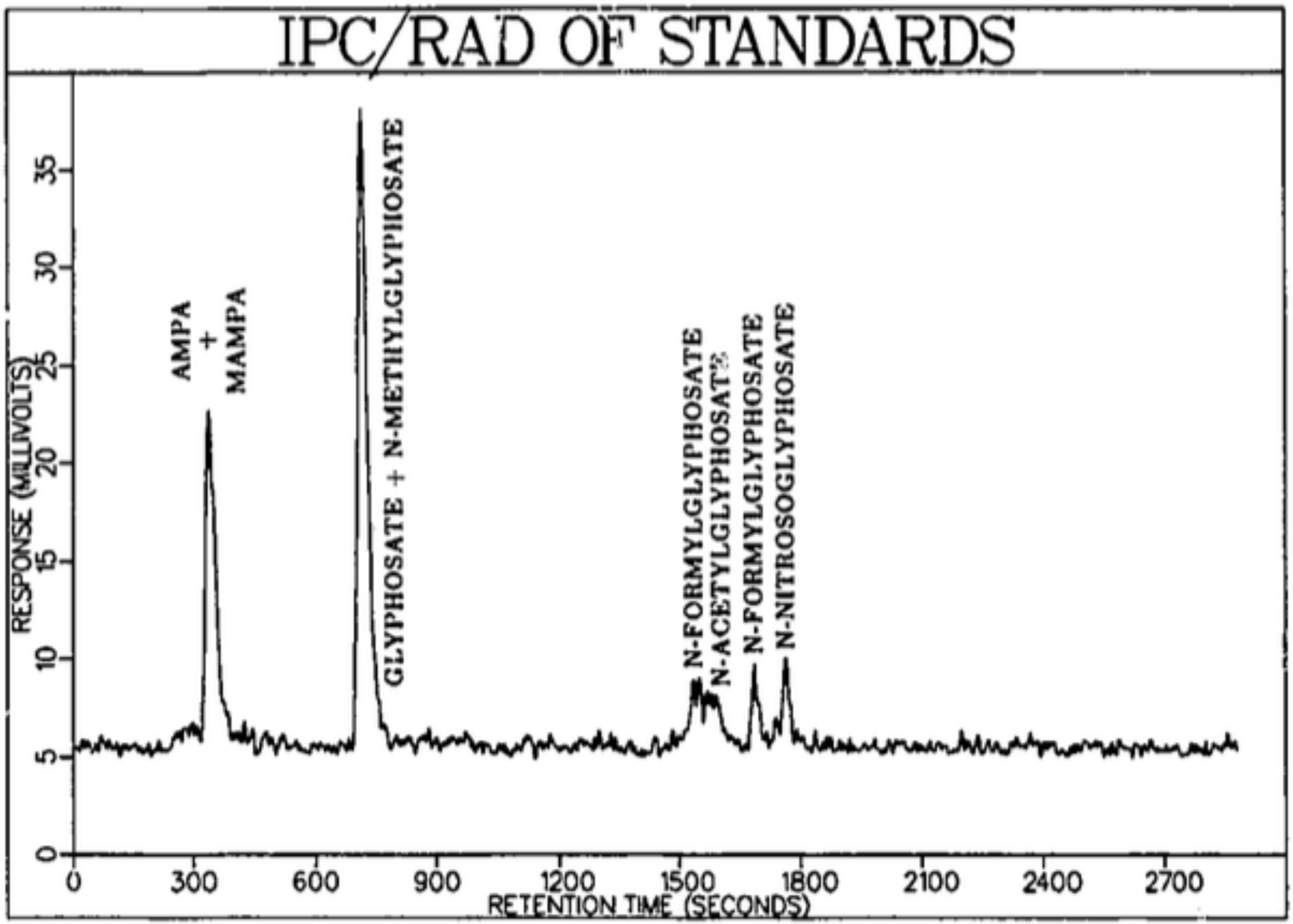


Monsanto Cation Exchange HPLC for Glyphosate, Metabolites and Reaction Product ID

Figure 2: CX HPLC/RAD of Radiolabeled Standards



Ion Pair Chromatography of Glyphosate



Glyphosate and Chronic Kidney Disease

Table 3. 1981 Bio/dynamics 26-month glyphosate feeding study [17]. Incidence of kidney focal tubular dilatation (FTD) and focal tubuler nephrosis (FTN) in Sprague Dawley rats.

Glyphosate dose /mg kg^{-1} day^{-1}	0	3	10	30
FTD unilateral	2/10 (20%)	3/10 (30%)	2/9 (22%)	7/10 (70%)
FTD bilateral	0/10 (0%)	2/10 (20%)	1/9 (11%)	1/10 (10%)
FTN unilateral	1/10 (10%)	2/10 (20%)	1/9 (11%)	0/10 (0%)
FTN bilateral	0/10 (0%)	0/10 (0%)	0/10 (0%)	1/10 (10%)

Glyphosate and Stomach Lesions

	Controls	Low	Mid	High
Glyphosate (ppm)	0	2000	8000	20 000
Males	2/58 (3.44%)	3/58 (5.17%)	5/59 (8.47%)	7/59 (11.86%)
Females	0/58 (0.00%)	3/60 (5.00%)	9/60 (15.00%)	6/59 (10.16%)

Tumors found in male Sprague-Dawley rats

Table A1. Incidence of neoplastic findings in male rats with glyphosate administered by diet. Part I. Data extracted from Lankas & Hogan (1981) [17].

Glyphosate /mg kg^{-1} day^{-1}	0	3	10	30
		PITUITARY		
Adenoma	16/48 (33%)	19/49 (38%)	20/48 (40%)	18/47 (36%)
Carcinoma	3/48 (6%)	2/49 (4%)	3/48 (6%)	1/47 (2%)
		BRAIN		
Glioma	1/49 (2%)	3/50 (6%)	0/50 (0%)	1/50 (2%)
		HEART		
Reticulum cell sarcoma	0/49 (0%)	0/49 (0%)	1/50 (2%)	0/50 (0%)
		LUNG		
Sarcoma 0/50 (0%)	0/50 (0%)	0/50 (0%)	0/50 (2%)	1/50 (2%)
Reticulum cell sarcoma	1/50 (2%)	1/50 (2%)	1/50 (2%)	1/50 (2%)
MS[a] Malignant mixed tumour	0/50 (0%)	1/50 (2%)	0/50 (0%)	0/50 (0%)
		MANDIBULAR SALIVARY GLAND		
Reticulum cell sarcoma	0/49 (0%)	0/49 (0%)	1/49 (2%)	0/49 (0%)
		MEDIASTINAL LYMPH NODE		
MS[a] Fibrosarcoma	0/39 (0%)	0/39 (0%)	1/32 (3%)	0/35 (0%)
Reticulum cell sarcoma	1/39 (3%)	0/39 (0%)	1/32 (3%)	0/35 (0%)
		SPLEEN		
Reticulum cell sarcoma	0/50 (0%)	0/50 (0%)	2/50 (4%)	1/50 (2%)
		STOMACH		
Squamous cell carcinoma, Cardia	0/50 (0%)	0/49 (0%)	0/48 (0%)	1/49 (2%)
		JEJUNUM		
Reticulum cell sarcoma	0/49 (0%)	0/46 (0%)	1/48 (2%)	0/49 (0%)
		KIDNEY		
Tubular adenoma	1/50 (2%)	1/50 (2%)	0/50 (0%)	0/50 (0%)
Reticulum cell sarcoma	1/50 (2%)	1/50 (2%)	1/50 (2%)	0/50 (0%)
Lipoma	1/50 (2%)	1/50 (2%)	1/50 (2%)	0/50 (0%)
		TESTES		
Interstitial cell tumour	0/50 (0%)	3/50 (6%)	1/50 (2%)	6/50 (12%)

[a]MS = metastatic

Tumors found in male Sprague-Dawley rats

Table A2. Incidence of neoplastic findings in male rats with glyphosate administered by diet. Part II. Data extracted from Lankas & Hogan (1981) [17].

Glyphosate /mg kg^{-1} day^{-1}	0	3	10	30
	PROSTATE			
Reticulum cell sarcoma	0/50 (0%)	0/47 (0%)	1/49 (2%)	0/49 (0%)
	URINARY BLADDER			
Papilloma	0/46 (0%)	1/45 (2%)	0/43 (0%)	0/46 (0%)
	THYROID			
C-cell carcinoma	0/47 (0%)	0/49 (0%)	1/49 (2%)	0/49 (0%)
Follicular adenoma	1/47 (2%)	2/49 (4%)	4/49 (8%)	4/49 (8%)
	PARATHYROID			
Adenoma	0/27 (0%)	2/30 (4%)	0/28 (0%)	0/27 (0%)
	ADRENAL			
Reticulum cell sarcoma	0/50 (0%)	0/50 (0%)	1/50 (2%)	0/50 (0%)
Pheochromo-cytoma	8/50 (16%)	8/50 (16%)	5/50 (10%)	11/50 (22%)
Cortical adenoma	2/50 (4%)	4/50 (8%)	1/50 (2%)	1/50 (2%)
	SKIN			
Basosquamous cell tumour	0/49 (0%)	0/48 (0%)	0/49 (0%)	1/49 (2%)
Sebaceous gland adenoma	0/49 (0%)	0/48 (0%)	0/49 (0%)	1/49 (2%)
	PERIOCULAR TISSUE			
Squamous cell carcinoma	0/0 (0%)	0/0 (0%)	1/1 (100%)	0/0 (0%)
	SUBCUTANEOUS TISSUE			
Fibrosarcoma	2/10 (20%)	1/12 (8%)	2/10 (20%)	3/7 (43%)
Fibroma	0/10 (0%)	3/12 (24%)	1/10 (10%)	2/7 (29%)
Neuro brosarcoma	0/10 (0%)	0/12 (0%)	0/10 (0%)	1/7 (14%)
Lipoma	1/10 (10%)	2/12 (17%)	0/10 (0%)	0/7 (0%)
Osteogenic sarcoma	0/10 (0%)	0/12 (0%)	1/10 (10%)	0/7 (0%)
Malignant mixed tumour	0/10 (0%)	1/12 (8%)	0/10 (0%)	0/7 (0%)
	MEDIASTINAL TISSUE			
Reticulum cell sarcoma	0/7 (0%)	0/1 (0%)	0/4 (0%)	1/2 (50%)
	ABDOMEN			
Lipoma	0/0 (0%)	0/0 (0%)	0/0 (0%)	1/1 (100%)
	ABDOMINAL CAVITY			
Reticulum cell sarcoma	0/0 (0%)	0/0 (0%)	1/1(100%)	0/0 (0%)
	LUMBAR LYMPH NODE			
MS[a] Islet cell carcinoma	0/0 (0%)	0/0 (0%)	0/0 (0%)	1/1 (100%)
	SACRAL LYMPH NODE			
Reticulum cell sarcoma	0/1 (0%)	1/3 (33%)	0/3 (0%)	0/3 (0%)

Table A3. Incidence of neoplastic findings in female rats with glyphosate administered by diet. Part I. Data extracted from Lankas & Hogan (1981) [17].

Glyphosate /mg kg^{-1} day^{-1}	0	3	10	30
	PITUITARY			
Carcinoma	8/48 (17%)	7/48 (15%)	5/50 (10%)	12/49 (24%)
	BRAIN			
Invasive pituitary carcinoma	0/50 (0%)	0/49 (0%)	1/50 (2%)	1/50 (2%)
Malignant lymphoma	0/50 (0%)	0/49 (0%)	0/50 (0%)	1/50 (2%)
Glioma	0/50 (0%)	0/49 (0%)	0/50 (0%)	1/50 (2%)
	CERVICAL SPINAL CORD			
Malignant lymphoma	0/50 (0%)	0/50 (0%)	0/50 (0%)	1/50 (2%)
	HEART			
Malignant lymphoma	0/50 (0%)	0/50 (0%)	0/50 (0%)	1/50 (2%)
	LUNG			
Reticulum cell sarcoma	2/49 (4%)	2/50 (4%)	1/49 (2%)	3/50 (6%)
Malignant lymphoma	0/49 (0%)	1/50 (2%)	0/49 (0%)	1/50 (2%)
Adenocarcinoma	0/49 (0%)	0/50 (0%)	0/49 (0%)	1/50 (2%)
Carcinoma	0/49 (0%)	0/50 (0%)	1/49 (2%)	0/50 (0%)
	LIVER			
Reticulum cell sarcoma	2/50 (4%)	2/50 (4%)	1/50 (2%)	2/50 (4%)
Malignant lymphoma	0/50 (0%)	0/50 (0%)	1/50 (2%)	2/50 (4%)
Hepatocellular carcinoma	1/50 (2%)	0/50 (0%)	0/50 (0%)	2/50 (4%)
	MESENTERIC LYMPH NODE			
Malignant lymphoma	0/42 (0%)	0/39 (0%)	0/48 (0%)	1/47 (2%)
Reticulum cell sarcoma	0/42 (0%)	0/39 (0%)	0/48 (0%)	2/47 (4%)
	PANCREAS			
Islet cell carcinoma	0/50 (0%)	1/50 (2%)	1/50 (2%)	1/49 (2%)
	MANDIBULAR SALIVARY GLAND			
Metastatic fibrosarcoma	0/48 (0%)	0/50 (0%)	1/49 (2%)	0/49 (0%)
	THYMUS			
Malignant lymphoma	0/25 (0%)	0/32 (0%)	1/37 (3%)	1/34 (3%)
Thymoma	0/25 (0%)	0/32 (0%)	1/37 (3%)	0/34 (0%)
	MEDIASTINAL LYMPH NODE			
Reticulum cell sarcoma	0/33 (0%)	1/29 (3%)	0/37 (0%)	0/30 (0%)
Malignant lymphoma	0/33 (0%)	0/29 (0%)	1/37 (3%)	2/30 (7%)
	SPLEEN			
Malignant lymphoma	0/50 (0%)	0/50 (0%)	1/50 (2%)	2/50 (4%)
Reticulum cell sarcoma	2/50 (4%)	2/50 (4%)	1/50 (2%)	5/50 (10%)
	STOMACH			
Malignant lymphoma	0/50 (0%)	0/50 (0%)	0/50 (0%)	1/50 (2%)
	JEJUNUM			
Leiomyosarcoma	0/50 (0%)	1/48 (2%)	0/49 (0%)	0/49 (0%)
	ILEUM			
Reticulum cell sarcoma	0/47 (0%)	0/49 (0%)	0/49 (0%)	1/48 (2%)
	COLON			
Reticulum cell sarcoma	0/50 (0%)	0/50 (0%)	0/49 (0%)	1/48 (2%)
	URINARY BLADDER			
Transitional cell tumour	0/50 (0%)	0/48 (0%)	0/48 (0%)	1/44 (2%)

Tumors found in female Sprague-Dawley rats

Table A4. Incidence of neoplastic findings in female rats with glyphosate administered by diet. Part II. Data extracted from Lankas & Hogan (1981) [17].

Glyphosate /mg kg^{-1} day^{-1}	0	3	10	30
		OVARY		
Granulosa cell tumour	8/49 (16%)	8/50 (16%)	6/48 (13%)	6/45 (13%)
Theca-granulosa cell tumour	0/49 (0%)	0/50 (0%)	0/48 (0%)	1/45 (2%)
		UTERUS		
Squamous cell carcinoma	0/50 (0%)	0/50 (0%)	0/49 (0%)	1/49 (2%)
Endometrial sarcoma	0/50 (0%)	0/50 (0%)	0/49 (0%)	1/49 (2%)
Adenoma	0/50 (0%)	0/50 (0%)	2/49 (4%)	1/49 (2%)
		THYROID		
C-cell adenoma	5/47 (10%)	3/49 (6%)	6/50 (12%)	3/47 (6%)
C-cell carcinoma	1/47 (2%)	0/49 (0%)	2/50 (4%)	6/47 (12%)
Metastatic fibrosarcoma	0/47 (0%)	0/49 (0%)	1/50 (2%)	0/47 (0%)
		PARATHYROID		
Adenoma	0/23 (0%)	0/25 (0%)	0/25 (0%)	1/23 (4%)
		ADRENAL		
Reticulum cell sarcoma	1/50 (2%)	1/50 (2%)	1/50 (2%)	3/49 (6%)
Pheochromo-cytoma	1/50 (2%)	2/50 (4%)	2/50 (4%)	2/49 (4%)
Cortical adenoma	5/50 (10%)	10/50 (20%)	6/50 (12%)	4/49 (8%)
Malignant lymphoma	0/50 (0%)	0/50 (0%)	0/50 (0%)	1/49 (2%)
		MAMMARY GLAND (L&R)		
Adenoma (L)	4(47) (8%)	7(46) (15%)	10(48) (20%)	5(44) (11%)
Adenoma (R)	4(47) (8%)	7(46) (15%)	8(48) (16%)	5(44) (11%)
Fibroadenoama (L)	33/47) (66%)	28(46) (61%)	27(48) (56%)	22(44) (50%)
Fibroadenoama (R)	24(47) (48%)	16(46) (35%)	20(48) (41%)	16/44 (36%)
		EYE		
Periocular fibrosarcoma	0/49 (0%)	0/48 (0%)	1/50 (2%)	0/47 (0%)
		HARDERIAN GLAND		
Malignant lymphoma	0/47 (0%)	0/45 (0%)	0/47 (0%)	1/44 (2%)
Invasive fibrosarcoma	0/47 (0%)	0/45 (0%)	1/47 (2%)	0/44 (0%
		BONE MARROW		
Malignant lymphoma	0/46 (0%)	0/44 (0%)	1/46 (2%)	1/45 (2%)
Reticulum cell sarcoma	1/46 (2%)	0/44 (0%)	1/46 (2%)	3/45 (6%)
		SUBCUTANEOUS TISSUE		
Lipoma	0/4 (0%)	0/6 (0%)	0/1 (0%)	2/2 (100%)
Reticulum cell sarcoma	0/4 (0%)	2/6 (33%)	0/1 (0%)	0/2 (0%)
		MEDIASTINAL TISSUE		
Reticulum cell sarcoma	0/2 (0%)	1/1 (100%)	0/2 (0%)	0/2 (0%)
		MESENTERY		
Reticulum cell sarcoma	0/5 (0%)	0/5 (0%)	0/2 (0%)	2/7 (29%)
		MANDIBULAR LYMPH NODE		
Malignant lymphoma	0/2 (0%)	0/3 (0%)	0/6 (0%)	1/6 (17%)
		URETER		
Transitional cell carcinoma	0/0 (0%)	0/0 (0%)	1/1 (100%)	1/1 (100%)

Tumors found in female Sprague-Dawley rats

Tumors found in male mice

Table A5. Incidence of neoplastic findings in male mice with glyphosate administered by diet. Part I. From Knezevich & Hogan, 1983 [18]. BN = Benign, MG = Malignant, MS = Metastatic.

Glyphosate (ppm)	0	Low (1000)	Mid (5000)	High (30000)
		BRAIN		
MS Lymphoblastic lymphosarcoma with leukaemic manifestations	0/49 (0%)	0/50 (0%)	1/50 (2%)	0/50 (0%)
		HEART		
MS Lymphoblastic lymphosarcoma with leukaemic manifestations	0/47 (0%)	1/49 (2%)	2/49 (4%)	1/50 (2%)
		LUNGS		
BN Bronchiolar-alveolar adenoma	5/48 (10%)	9/50 (18%)	9/50 (18%)	9/50 (18%)
MG Bronchiolar-alveolar adeno-carcinoma	4/48 (8%)	3/50 (6%)	2/50 (4%)	1/50 (2%)
MS Lymphoblastic lymphosarcoma with leukaemic manifestations	1/48 (2%)	4/50 (8%)	3/50 (6%)	1/50 (2%)
MS Lymphoblastic lymphosarcoma	0/48 (0%)	1/50 (2%)	0/50 (0%)	0/50 (0%)
		LIVER		
MG Hepatocellular adenocarcinoma	5/49 (10%)	6/50 (12%)	6/50 (12%)	4/50 (8%)
BN Hepatocellular adenoma	0/49 (0%)	0/50 (0%)	1/50 (2%)	0/50 (0%)
MG Hepatocellular carcinoma	0/49 (0%)	0/50 (0%)	0/50 (0%)	2/50 (4%)
MS Histiocytic sarcoma	0/49 (0%)	1/50 (2%)	0/50 (0%)	0/50 (0%)
MS Liposarcoma	0/49 (0%)	0/50 (0%)	1/50 (2%)	1/50 (2%)
MS Lymphoblastic lymphosarcoma with leukaemic manifestations	1/49 (2%)	4/50 (8%)	2/50 (4%)	2/50 (4%)
		MESENTERIC LYMPH NODES		
MG Histiocytic Sarcoma with leukaemic manifestations	0/40 (0%)	1/50 (2%)	0/46 (0%)	0/49 (0%)
MG Lymphoblastic lymphosarcoma with leukaemic manifestations	1/40 (2%)	2/50 (4%)	1/46 (2%)	0/49 (0%)
MS Lymphoblastic lymphosarcoma with leukaemic manifestations	0/40 (0%)	0/50 (0%)	1/46 (2%)	2/49 (4%)
MG Lymphoblastic lymphosarcoma	0/40 (0%)	1/50 (2%)	0/46 (0%)	0/49 (0%)
		MEDIASTINAL LYMPH NODES		
MS Histiocytic sarcoma	0/45 (0%)	1/49 (2%)	0/41 (0%)	0/49 (0%)
MS Lymphoblastic lymphosarcoma with leukaemic manifestations	1/45 (2%)	2/49 (4%)	1/41 (2%)	2/49 (4%)
MG Lymphoblastic lymphosarcoma with leukaemic manifestations	0/45 (0%)	0/49 (0%)	2/41 (5%)	0/49 (0%)

Table A6. Incidence of neoplastic findings in male mice with glyphosate administered by diet. Part II. From Knezevich & Hogan,1983 [18]. BN = Benign, MG = Malignant, MS = Metastatic.

Glyphosate (ppm)	0	Low (1000)	Mid (5000)	High (30000)
		SPLEEN		
MG Hemangio-endothelioma	0/48 (0%)	0/49 (0%)	1/50 (2%)	0/49 (0%)
MS Histiocytic sarcoma	0/48 (0%)	1/49 (2%)	0/50 (0%)	0/49 (0%)
MS Lymphoblastic lymphosarcoma	1/48 (2%)	2/49 (4%)	2/50 (4%)	0/49 (0%)
MG Lymphoblastic lymphosarcoma with leukaemic manifestations	0/48 (0%)	2/49 (4%)	0/50 (0%)	1/49 (2%)
		PANCREAS		
MS Histiocytic Sarcoma	0/48 (0%)	1/48 (2%)	0/50 (0%)	0/49 (0%)
MS Lymphoblastic lymphosarcoma with leukaemic manifestations	0/48 (0%)	0/48 (0%)	1/49 (2%)	0/50 (0%)
		KIDNEYS		
BN Renal tubule adenoma	0/49 (0%)	0/49 (0%)	1/50 (2%)	3/50 (6%)
MS Histiocytic sarcoma	0/49 (0%)	1/49 (2%)	0/50 (0%)	0/50 (0%)
MS Composite lymphosarcoma	1/49 (2%)	0/49 (0%)	0/50 (0%)	0/50 (0%)
MS Lymphoblastic lymphosarcoma with leukaemic manifestations	1/49 (2%)	3/49 (6%)	2/50 (4%)	2/50 (4%)
		ADRENAL GLANDS		
BN Cortical adenoma	1/48 (2%)	2/49 (4%)	0/50 (0%)	1/48 (2%)
MS Lymphoblastic lymphosarcoma with leukaemic manifestations	0/48 (0%)	1/49 (2%)	0/50 (0%)	0/48 (0%)
BN Lymphoblastic lymphosarcoma with leukaemic manifestations	0/48 (0%)	0/49 (0%)	1/49 (2%)	0/48 (0%)
		HARDERGIAN GLAND		
BN Adenoma	1/47 (2%)	0/48 (0%)	0/45 (0%)	0/48 (0%)
MG Liposarcoma	0/47 (0%)	0/48 (0%)	1/45 (2%)	0/48 (0%)
		BONE MARROW		
MS Lymphoblastic lymphosarcoma with leukaemic manifestations	1/40 (2%)	2/45 (4%)	1/47 (2%)	1/49 (2%)
		LYMPH NODE		
MS Histiocytic sarcoma	0/0 (0%)	1/3 (33%)	0/2 (0%)	0/2 (0%)
MS Composite lymphosarcoma	0/0 (0%)	0/3 (0%)	1/2 (50%)	0/2 (0%)
MS Lymphoblastic lymphosarcoma with leukaemic manifestations	0/0 (0%)	1/3 (33%)	1/2 (50%)	0/2 (0%)
MG Lymphoblastic lymphosarcoma with leukaemic manifestations	0/0 (0%)	0/3 (0%)	0/2 (0%)	1/2 (50%)
		TESTES		
BN Interstitial cell tumor	1/49 (2%)	0/48 (0%)	2/50 (4%)	0/50 (0%)
MS Lymphoblastic lymphosarcoma with leukaemic manifestations	0/49 (0%)	1/48 (2%)	0/50 (0%)	0/50 (0%)
BN Lymphoblastic lymphosarcoma with leukaemic manifestations	0/49 (0%)	0/48 (0%)	1/50 (2%)	0/50 (0%)

Tumors found in male mice

Tumors found in female mice

Table A7. Incidence of neoplastic findings in female mice with glyphosate administered by diet. Part I. From Knezevich & Hogan, 1983 [18]. BN = Benign, MG = Malignant, MS = Metastatic.

Glyphosate (ppm)	Controls 0	Low Low (1000)	Mid Mid (5000)	High High (30 000)
		BRAIN		
MS Lymphoblastic lymphosarcoma with leukaemic manifestations	0/50 (0%)	0/49 (0%)	1/50 (2%)	0/50 (0%)
		HEART		
MS Lymphoblastic lymphosarcoma with leukaemic manifestations	0/50 (0%)	0/50 (0%)	2/50 (4%)	0/49(0%)
		LUNGS		
BN Bronchiolar-alveolar adenoma	10/49 (20%)	9/50 (18%)	10/49 (20%)	1/50 (2%)
MG Bronchiolar-alveolar adenocarcinoma	1/49 (2%)	3/50 (6%)	4/49 (8%)	4/50 (8%)
BN Granulosa cell tumour	0/49 (0%)	1/50 (2%)	0/49 (0%)	0/50 (0%)
MS Lymphoblastic lymphosarcoma with leukaemic manifestations	1/49 (2%)	2/50 (4%)	5/49 (10%)	1/50 (2%)
MS Lymphoblastic lymphosarcoma	0/50 (0%)	0/50 (0%)	0/49 (0%)	1/50 (2%)
		LIVER		
MG Hepatocellular adenocarcinoma	1/49 (2%)	2/50 (4%)	1/49 (2%)	0/49 (0%)
BN Hepatocellular adenoma	0/49 (0%)	1/50 (2%)	0/49 (0%)	0/49 (0%)
MS Leiomyosarcoma	0/49 (0%)	1/50 (2%)	0/49 (0%)	0/49 (0%)
MS Granulocytic leukaemia	0/49 (0%)	3/50 (6%)	0/49 (0%)	0/49 (0%)
MG Hemangioendiothelioma	0/49 (0%)	0/50 (0%)	2/49 (4%)	0/49 (0%)
MS Composite lymphosarcoma	2/49 (4%)	1/50 (2%)	0/49 (0%)	4/49 (8%)
MS Lymphoblastic lymphosarcoma with leukaemic manifestations	1/49 (2%)	4/50 (8%)	4/49 (8%)	1/49 (2%)
MS Lymphoblastic lymphosarcoma	0/49 (0%)	0/50 (0%)	0/49 (0%)	2/49 (4%)
		MESENTERIC LYMPH NODES		
MS Leimyosarcoma	0/49 (0%)	1/49 (2%)	0/48 (0%)	0/48 (0%)
MS Granulocytic leukaemia	0/49 (0%)	1/49 (2%)	0/48 (0%)	0/48 (0%)
MG Lymphoblastic lymphosarcoma with leukaemic manifestations	0/49 (0%)	3/49 (6%)	1/48 (2%)	1/48 (2%)
MS Lymphoblastic lymphosarcoma with leukaemic manifestations	1/49 (2%)	1/49 (2%)	3/48 (6%)	0/48 (0%)
MS Composite lymphosarcoma	1/49 (2%)	1/49 (2%)	1/48 (2%)	3/48 (6%)
MG Lymphoblastic lymphosarcoma	0/49 (0%)	0/48 (0%)	0/48 (0%)	2/48 (4%)
MS Lymphoblastic lymphosarcoma	0/49 (0%)	0/49 (0%)	0/49 (0%)	1/49 (2%)
MS Haemangioendothelioma	0/49 (0%)	0/49 (0%)	0/49 (0%)	1/49 (2%)

Tumors found in female mice

Table A8. Incidence of neoplastic findings in female mice with glyphosate administered by diet. Part II. From Knezevich & Hogan,1983 [18]. BN = Benign, MG = Malignant, MS = Metastatic.

Glyphosate (ppm)	Controls 0	Low Low (1000)	Mid Mid (5000)	High High (30 000)
	MEDIASTINAL LYMPH NODES			
MS Leimyosarcoma	0/42 (0%)	1/48 (2%)	0/39 (0%)	0/47 (0%)
MS Granulocytic leukaemia	0/42 (0%)	1/48 (2%)	0/39 (0%)	0/47 (0%)
MS Liposarcoma	1/42 (2%)	0/48 (0%)	0/39 (0%)	0/47 (0%)
MS Composite lymphosarcoma	1/42 (2%)	1/48 (2%)	0/39 (0%)	2/47 (4%)
MS Lymphoblastic lymphosarcoma with leukaemic manifestations	0/42 (0%)	1/48 (2%)	3/39 (8%)	0/47 (0%)
MG Lymphoblastic lymphosarcoma with leukaemic manifestations	1/42 (2%)	1/48 (2%)	2/39 (5%)	0/47 (0%)
MS Lymphoblastic lymphosarcoma	0/42 (0%)	1/48 (2%)	0/39 (0%)	1/47 (2%)
	SALIVARY GLAND			
MS Leiomyosarcoma	0/50 (0%)	0/50 (0%)	1/50 (2%)	0/47 (0%)
	SPLEEN			
MG Hemangio-endothelioma	1/50 (2%)	0/48 (0%)	2/49 (4%)	1/49 (2%)
MG Granulocytic leukemia	0/50 (0%)	3/48 (6%)	0/49 (0%)	0/49 (0%)
MS Hemangio-endiothelioma	0/50 (0%)	0/48 (0%)	0/49 (0%)	1/49 (2%)
MS Lymphoblastic lymphosarcoma with leukaemic manifestations	1/50 (2%)	2/48 (4%)	2/49 (4%)	0/49 (0%)
MG Lymphoblastic lymphosarcoma with leukaemic manifestations	0/50 (0%)	0/48 (0%)	2/49 (4%)	0/49 (0%)
MG Composite lymphosarcoma	1/50 (2%)	1/48 (2%)	1/49 (2%)	5/49 10%)
MS Lymphoblastic lymphosarcoma	0/50 (0%)	0/48 (0%)	0/49 (0%)	1/49 (2%)
	STOMACH			
MG Leiomyosarcoma	0/48 (0%)	0/49 (0%)	1/50 (2%)	0/50 (0%)
MG Gastric adenosarcoma	0/48 (0%)	0/49 (0%)	1/50 (2%)	0/50 (0%)
	PANCREAS			
MS Granulocytic leukaemia	0/47 (0%)	1/47 (2%)	0/49 (0%)	0/50 (0%)
MS Composite lymphosarcoma	2/47 (4%)	1/47 (2%)	0/49 (0%)	1/50 (2%)
MS Lymphoblastic lymphosarcoma with leukaemic manifestations	1/47 (2%)	1/47 (2%)	1/49 (2%)	0/50 (0%)
	KIDNEYS			
MS Leiomyosarcoma	0/50 (0%)	1/50 (2%)	0/50 (0%)	0/50 (0%)
MS Granulocytic leukaemia	0/50 (0%)	1/50 (2%)	0/50 (0%)	0/50 (0%)
MS Composite lymphosarcoma	2/50 (4%)	1/50 (2%)	1/50 (2%)	2/50 (4%)
MS Lymphoblastic lymphosarcoma with leukaemic manifestations	1/50 (2%)	2/50 (4%)	3/50 (6%)	1/50 (2%)
MS Lymphoblastic lymphosarcoma	0/50 (0%)	0/50 (0%)	0/50 (0%)	1/50 (2%)

Tumors found in female mice 1983

Table A9. Incidence of neoplastic findings in female mice with glyphosate administered by diet. Part III. From Knezevich & Hogan,1983 [18]. BN = Benign, MG = Malignant, MS = Metastatic.

	Controls	Low	Mid	High
Glyphosate (ppm)	0	Low (1000)	Mid (5000)	High (30000)
		URINARY BLADDER		
MS Granulocytic leukaemia	0/47 (0%)	1/43 (2%)	0/49 (0%)	0/48 (0%)
MS Composite lymphosarcoma	1/47 (2%)	1/43 (2%)	0/49 (0%)	0/48 (0%)
MS Lymphoblastic lymphosarcoma with leukaemic manifestations	1/47 (2%)	2/43 (4%)	2/49 (4%)	0/48 (0%)
		OVARIES		
MG Teratoma	0/47 (0%)	1/47 (2%)	0/50 (0%)	0/47 (0%)
MG Granulosa cell tumour	0/47 (0%)	1/47 (2%)	0/50 (0%)	0/47 (0%)
MS Leiomyosarcoma	0/47 (0%)	1/47 (2%)	0/50 (0%)	0/47 (0%)
MS Lymphoblastic lymphosarcoma with leukaemic manifestations	0/47 (0%)	1/47 (2%)	0/50 (0%)	0/47 (0%)
MS/BN Lymphoblastic lymphosarcoma with leukaemic manifestations	1/47 (2%)	0/47 (0%)	2/50 (4%)	0/47 (0%)
		UTERUS		
MS Leiomyoma	2/49 (4%)	1/48 (2%)	1/49 (2%)	1/50 (2%)
MG Leiomyosarcoma	2/49 (4%)	3/48 (6%)	2/49 (4%)	3/50 (6%)
MG Endometrial stromal cell carcinoma	0/49 (0%)	1/48 (2%)	0/49 (0%)	0/50 (0%)
MS Haemangioma	0/49 (0%)	1/48 (2%)	0/49 (0%)	0/50 (0%)
MG Haemangio-endiothelioma	0/49 (0%)	0/48 (0%)	0/49 (0%)	1/50 (0%)
MS Lymphoblastic lymphosarcoma with leukaemic manifestations	0/49 (0%)	3/48 (6%)	1/49 (2%)	0/50 (0%)
		CERVIX		
MG Leiomyosarcoma	0/0 (0%)	2/2 (100%)	0/0 (0%)	0/1 (0%)
		THYROID		
MS Follicular adenoma	0/43 (0%)	0/37 (0%)	1/49 (2%)	0/48 (0%)
		SKIN		
MG Fibrosarcoma	0/45 (0%)	1/45 (2%)	1/49 (2%)	0/48 (0%)
		MAMMARY		
MG Ductal adenocarcinoma	2/38 (5%)	4/36 (11%)	2/40 (5%)	1/38 (3%)
MS Lymphoblastic lymphosarcoma with leukaemic manifestations	0/38 (0%)	0/36 (0%)	1/40 (3%)	0/38 (0%)
		BONE MARROW		
MS Lymphoblastic lymphosarcoma with leukaemic manifestations	0/46 (0%)	1/49 (2%)	3/47 (6%)	1/49 (2%)
MS Lymphoblastic lymphosarcoma	0/46 (0%)	0/49 (0%)	0/47 (0%)	2/49 (4%)
MS Composite lymphosarcoma	0/46 (0%)	0/49 (0%)	0/47 (0%)	1/49 (2%)

Organic vs Conventional vs GE farming

- Organic = No herbicides in food
- Conventional = Herbicides, pesticides and fungicides
- GE Farming = Crops resistant to multiple herbicides

Glyphosate WeatherMax is Potassium Glyphosate

The salts and and esters used in commercial Glyphosate formulations are

- Potassium Glyphosate
- Ammonium Glyphosate
- Isopropylamine glyphosate

Glyphosate Technical N-Phosphonomethyl glycine the acid form is mixed with salts and esters of glyphosate.

Glyphosate Technical was the chemical used in all of Monsanto's long-term 2-year studies done in mice and rats for regulatory approval. The salts and esters were never tested in these studies.

2.5 Gallons of WeatherMax sitting on top of my corn planter

Monsanto's registration process for Glyphosate products with the US EPA is a sham

- The Glyphosate that was tested by Monsanto in their long term studies is not the same Glyphosate sprayed on crops, but rather different compounds, its salts and esters. These products have greater negative effects on biology due in part to their solubility.

- Glyphosate Technical Acid or N-Phophonomethyl glycine was used in all of Monsanto's long-term studies. Its solubility is 10.1 g/L and was fed to test animals by weight in daily chow

- Solubility of Potassium glyphosate used in Roundup WeatherMAX is quite high at 48.7%

- Solubility of Isopropylamine glyphosate is 41% in Roundup ULTRA, ULTRAMAX and ULTRAMAX II products.

- Monsanto demonstrated that most was excreted, only 30 to 35% retained, but by the end of the experiment 1 to 2% was found incorporated in the tissues (from one 10 mg feeding). The beta half-life of radio-labeled Glyphosate is between 7 and 14 days for male and female animals …..

Glyphosate Use In Agriculture

Including Staging and Desiccation

Glyphosate is used on all major Genetically Engineered crops of corn, soy, canola, sugar beet, cotton, tobacco and for pre-plant and post harvest on most other crops. Glyphosate is sprayed on 160 approved crops and or crop groups for food, animal feed and forage. The herbicide is also applied in staging for pre-harvest control of weeds and also used as a desiccant to dry crops like peas and beans for harvest. Glyphosate residues are found on everything its sprayed on, as well as in some crops due to soil migration. The use of Glyphosate is unprecedented and ensures passage of the chemical through the food chain which includes meat, milk, cheese and eggs.

Some crops sprayed in staging and desiccation are:

Sugar cane (ripening)

Wheat

Barley, and cereal grains

Dried peas, peanuts and beans

Sunflower and safflower

Sweet potato, potato and tuber group; vegetable bulb group(most growers have stopped dry down on potatoes due to tuber damage. However, potatoes still absorb glyphosate from the soil from pre-plant and post harvest applications.

It is also sprayed in orchards around fruit and nut trees and between crop rows, where it is also absorbed by plant roots. The crop residues are passed through the food chain which includes bees and other pollinators. In combination with other pesticides, like the systemic neonicotinoid Imidacloprid, Clothianadin and others, it becomes synergistically toxic.

Virtually all food products made from corn, soy and wheat are contaminated with Glyphosate

The percentage of the total acreage of wheat in the US treated with glyphosate in 1998 and 2012 -USDA

	1998	2012
Spring wheat	**91%**	**97%**
Durum wheat	**88%**	**99%**
Winter wheat	**47%**	**61%**

Manures are also contaminated with Glyphosate

In 2014 Samsel and Seneff found 170 ppb of Glyphosate in Enfamil ProSobee Infant Formula

"Glyphosate, Pathways to Modern Disease III: Manganese, Neurological Disease and Associated Pathologies"-Samsel and Seneff 2015

Glyphosate and AMPA in Soybeans USDA Pesticide Data Reported 2012

	% Samples with detections	Number analyzed	Number with detections	Range ppm	Mean ppm	EPA tolerance
Glyphosate	90.3	300	271	0.26 -18.5	1.973	20.0
AMPA	95.7	300	287	0.26 -20	2.279	20.0

How many children will we continue to harm with soy based infant formulas ?

We love our family members, so why are we feeding them Glyphosate at every meal ?

Popular Dog and Cat Foods That Contain Glyphosate

Analyzed Using HPLC -Samsel 2015

Cat Food	Glyphosate (mg/kg)	AMPA (mg/kg)
Purina Cat Chow Complete Dry	0.102	0.12
Friskies Indoor Delights Cat Food Dry	0.079	0.11
9 Lives Indoor Complete Cat Food Dry	0.14	0.12
Rachael Ray Zero Grain Whitefish and Potato Recipe Cat Food Dry	0.022	Trace (< 0.02)
Dog Food		
Purina Dog Chow Complete Dry	0.098	0.076
Kibbles 'n Bits Chef's Choice American Grill Dog Food Dry	0.3	0.24
Iams Proactive Health Small and Toy Breed Dog Food Dry	0.065	Trace (< 0.02)
Rachael Ray Nutrish Real Beef and Rice Recipe Dog Food	0.14	0.14
Purina Beyond Simply 9 White Meat Chicken & Whole Barley Recipe Dog Food Dry	0.047	0.031

Ho Er Tm Yb Lu
164.93032 167.26 168.93421 173.04 174.967
99 100 101 102 103
Es Fm Md No Lr
[252] [257] [258] [259] [262]
6
7

Now with Glyphosate in every bite !

NEW!
NUTRISH
zero GRAIN
GRAIN FREE FOOD for Cats
Whitefish & Potato Recipe
RESCUE
1.36kg)

New look!
Kibbles 'n Bits
Chef's Choice
American Grill
100% Complete & Balanced Nutrition

PURINA
Friskies
Indoor Delights

Morris
9Lives
Indoor Complete

Now with Glyphosate
in every bite !

RACHAEL RAY
NUTRISH
SUPER PREMIUM FOOD FOR DOGS
Simple & Natural Ingredients
Real Beef & Brown Rice Recipe
NET WT 6 LB (2.72KG)

IAMS
PROACTIVE HEALTH
SMALL & TOY BREED
ADULT 1-6 YEARS
NET WT. / POIDS NET : 3.1 lbs. (1.41 kg)

Beyond
SIMPLY 9
WHITE MEAT CHICKEN
& WHOLE BARLEY RECIPE
NET WT 4 LB (1.81 kg)

Glyphosate analysis of laboratory animal chows using HPLC - A.Samsel 2015

Table 14. Evidence of glyphosate contamination, and levels of folate and choline, in Purina rat chow products as determined from authors' own analyses.

	Glyphosate /mg kg^{-1}	AMPA /mg kg^{-1}	Folate /mg g^{-1}	Choline /mg g^{-1}
Purina Rat Chow 5002	0.65	0.35	0	4.827
Purina Chow 5K75	0.57	0.27	0	5.328
Purina Chow 5LG3	0.37	0.10	0	5.919

The American Veterinary Medical Foundation notes that "Cancer is the leading cause of death in older pets, accounting for almost half of the deaths of pets over 10 years of age." According to the Morris Animal Foundation, established in 1948, one in four dogs will die of cancer and over 22 000 cats will be diagnosed with aggressive sarcomas. Oral cancer squamous cell carcinomas are now found in cats and lead to the destruction of the jawbone. Mammary tumours, a common cancer found in dogs and cats, are also on the rise. We suspect that glyphosate may be a causal agent related to the rise of pet cancers, and used HPLC to analyse 9 popular brands of dog and cat food. We found significant levels of both glyphosate and AMPA in all pet foods tested (Table 15).

Samsel Field Experiments with GE'd Corn


CORN #1
7820
GTCBLLRW
OCTOBER 2, 2013

CORN #2
7820 GT

OCTOBER 2, 2013


CORN #3
7820 CBLLRW
OCTOBER 2, 2013


CORN #4
7820
OCTOBER 2, 2013

Samsel experiments with GE'd corn

Cover Crop of Mustard for the Honey Bees and wild pollinators

Thank You !

Deer rising with the sun here in New Hampshire