

Glyphosate at the root of human and animal diseases; further evidence

Overweight and obesity in mid-life: Evidence from the 1970 British Cohort Study¹

The Centre for Longitudinal Studies based at the Institute of Education University of London published their latest report on 9 November 2013.

Their key findings of the cohort at age 42 were that:

- The generation born in 1970 is considerably more likely to be overweight or obese than those born 12 years earlier were at the same age.
- Men born in 1970 are far more likely to be overweight than women.

Bearing in mind our previous reports about glyphosate being toxic in extremely low doses, we suggest that humans are being exposed regularly to small amounts of glyphosate residues in staple foods such as bread, cereals and lentils (see Defra Expert Committee on Pesticide Residues in Food.²) The use of glyphosate for desiccation on both barley and wheat was accepted by the brewing and distilling industries in 2007³ therefore it is probable that men are more likely to be overweight because of the consumption of beer or whisky with glyphosate residues. Many foods imported from the US have GM ingredients and will contain glyphosate (or other herbicide residues). These include products which are made from corn or soya, such as energy bars, sugar drinks; and fruit or vegetables. The US still does not require labelling of GM. Animals in the UK are fed with imported GM soya and maize. The fact that glyphosate is in the food chain is confirmed by two studies in which glyphosate residues were found in the urine of urban populations in Germany⁴ in 2012 and the EU as a whole in 2013.⁵

Glyphosate is used to dry crops before harvest, as well as for weed control

Pre-harvest application of glyphosate to wheat and barley in the UK was suggested as early as 1980, but its routine use as a drying agent 7-10 days before harvest began in 2006.

Monsanto's document: The agronomic benefits of glyphosate in Europe [2010]⁶ states:

Page 3: *“Since its discovery in the early 1970's the unique herbicidal active ingredient glyphosate ‘has become the world's most widely used herbicide because it is efficacious, economical and environmentally benign.’ These properties have enabled a plethora of uses which continue to expand to this day providing excellent weed control both in agricultural and non-crop uses to benefit mankind and the environment.* Glyphosate has an *“excellent safety profile to operators, the public and the environment”*. The document outlined at least 16 areas of use (p 3), from vegetation control on land throughout agricultural production, on GM Roundup® Ready Crops and on non-agricultural land *“around structures on farms, amenity and industrial areas and on railways”* (p 4). In 2004 desiccation was used on 13% wheat area in Europe. By 2006 it became used more routinely for weed control and pre-harvest treatment (at least 40% cereal and 80% oilseed rape, p 21). This means that glyphosate residues in human food and animal feed are increasing steadily.

¹ [Overweight and obesity in mid-life: Evidence from the 1970 British Cohort Study at age 42](#)

² <http://www.pesticides.gov.uk/guidance/industries/pesticides/advisory-groups/PriF>

³ Notes on the use of Roundup® products on malting, milling and seed crops: Monsanto UK Ltd 2007. <http://www.grainfarmers.co.uk/seeddownloads/Roundup%20on%20seed%20%20milling%20and%20malting.pdf>

⁴ <http://www.ithaka-journal.net/herbizide-im-urin?lang=e>

⁵ <http://www.foeeurope.org/weed-killer-glyphosate-found-human-urine-across-Europe-130613>

⁶ <http://www.monsanto.com/products/Documents/glyphosate-background-materials/Agronomic%20benefits%20of%20glyphosate%20in%20Europe.pdf>

On its recommendations for the use of Roundup® in UK Towns and Cities: “*It is approved for weed control in amenity, industrial, forestry and aquatic areas*”.⁷ As the Attorney General of New York pointed out when Monsanto was sued in 1998 for fraudulent advertising, this was not compatible with the product label: Environmental hazard. Do not apply directly to water. Instructions in the UK: “*From 2012 new rules from the regulator, Chemicals Regulation Directorate (CRD) prohibits blanket spraying of any herbicide on non-porous hard surfaces. Targeted treatment of weeds must be undertaken on roads, pavements, concrete and paved areas and drains must not be oversprayed*”.⁸

Defra Expert Committee on Pesticide Residues in Food⁹

The results from monitoring of Pesticide Residues in food have been published quarterly since 2000. Bread and breakfast cereals are staple foods but there are no maximum residue limits (MRLs) for bread or cereals. Residues in bread are tested twice a year.

2002 3rd Quarter: Comments: “*Residues of chlormequat,¹⁰ glyphosate and pirimiphos-methyl¹¹ were found (in bread). These pesticides are commonly used on cereal crops, and residues have been found in other cereal products, therefore these findings are not unexpected. None of the residues found were of concern for consumer health.*”

2006 3rd Quarter: Comments: “*Eating more starchy foods, like bread, is an important part of the Food Standards Agency’s (FSA) advice on healthy eating. The incidence of pesticide residues in bread is relatively high, but our assessment of the risk indicates that the levels we have found in this survey would not be expected to have an effect on health.*”

2007 3rd Quarter: Comments: “*Eating more starchy foods, like bread, is an important part of the FSA’s advice on healthy eating. We often find pesticide residues in bread but our assessment of the risk indicates that the levels we have found in this survey would not be expected to have an effect on health. We have asked the Secretariat to write to the Home Grown Cereals Authority about the incidence of residues*”. I couldn’t find a reply.

2011 3rd/4th Quarters for Lentils: Comments: Sixteen samples of lentils contained glyphosate above the MRL. A new higher level of glyphosate is expected to come into force in summer 2012. None of the residues detected in this survey would be above the new proposed MRL.

EFSA’s Reasoned Opinion Panel increases MRLs at the request of industry

Monsanto Europe asked EFSA to set the import tolerance for glyphosate in lentils “*in order to accommodate the authorised desiccation use of glyphosate in lentils in the US and Canada*” from 0.1 mg/kg to 10 mg/kg¹² (i.e. 100 times: January 2012). EFSA had granted similarly elevated MRLs for glyphosate on wheat and GM soya.

Glyphosate claimed by industry and GMO scientists to be safe

It is claimed by GMO scientists and industry supporters that: “*Glyphosate is not poisonous to mammals- it inhibits EPSP (5-enolpyruvylshikimate-3 phosphate) synthase an enzyme that mammals lack because we obtain aromatic amino acids in our diet*”.¹³ However, we can only

⁷ <http://www.monsanto-ag.co.uk/content.output/167/167/Roundup/Amenity/Aquatic%20use.msp>

⁸ <http://www.monsanto-ag.co.uk/content.output/165/165/Roundup/Amenity/Streets%20and%20Pavements.msp>

⁹ <http://www.pesticides.gov.uk/guidance/industries/pesticides/advisory-groups/PRiF/about-PRiF>

¹⁰ Chlormequat, a plant growth regulator was present consistently throughout.

¹¹ pirimiphos-methyl, is an organophosphate insecticide for use in storage. The approval was revoked on 24/03/2011, but it was only finally banned 31/03/2013, presumably to allow stocks to be used up.

¹² <http://www.efsa.europa.eu/en/efsajournal/pub/2550.htm>

¹³ Personal communication.

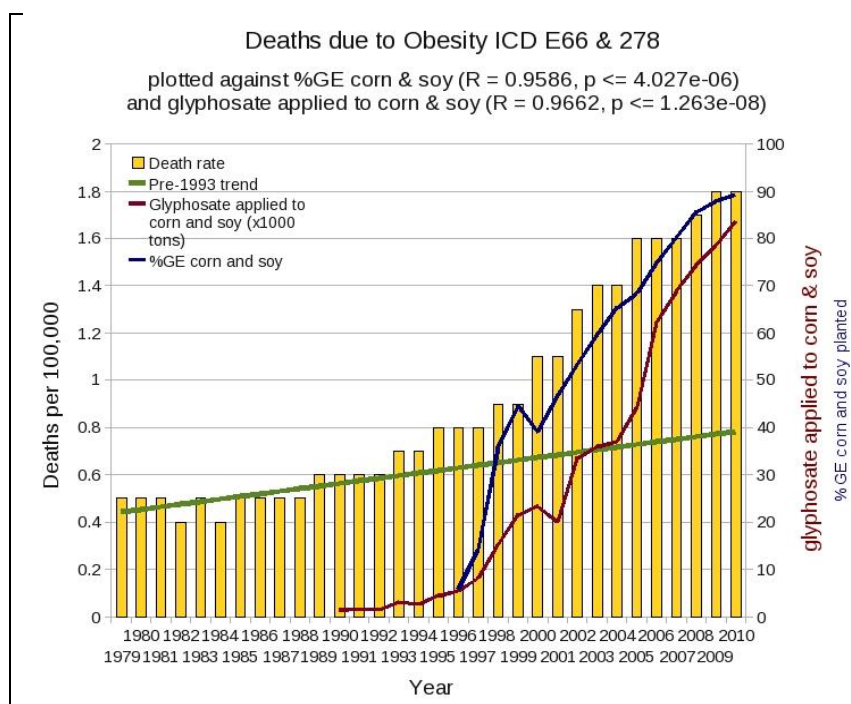
absorb nutrients by courtesy of the bacteria in our gut. Glyphosate disrupts our gut bacteria, without which we could not live. It is a strong chelator of essential minerals, such as cobalt, zinc, manganese, calcium, molybdenum and sulphate. In addition it kills off beneficial gut bacteria and allows toxic bacteria such as *Clostridium difficile* to flourish. Key problems caused by glyphosate in the diet are depletion of micronutrients, especially minerals and essential amino-acids, inhibition of CYP enzymes which detoxify toxins in the liver and systemic toxicity.¹⁴ This Youtube interview with Dr Stephanie Seneff explains how glyphosate residues cause, among other diseases, obesity, diabetes, autism, Parkinson's, Dementia, depression, gastrointestinal disorders, heart disease, infertility, cancer and Alzheimer's disease.¹⁵

The gut microbiome; the collective genome of organisms inhabiting our body

Chatelier, E.L. *et al.* Richness of human gut microbiome correlates with metabolic markers *Nature* 29 August 2013; 500: 541-550.¹⁶

"We are facing a global metabolic health crisis provoked by an obesity epidemic." In a multi-author study of obese and non-obese individuals, those with "low bacterial richness in the gut (23% of the population) are characterized by more marked overall adiposity, insulin resistance and dyslipidaemia and a more pronounced inflammatory phenotype when compared with those with high bacterial richness." "Low richness of gut microbiota has been reported in patients with inflammatory bowel disorder". "Also notable diversity differences were observed between the urban US population and rural populations from two developing countries". Current research is underway to try to find the links between obesity, type 2 diabetes and cancers (The Danish newspaper: Politiken Sunday 6 October 2013, Københavns Universitet).

Correlation of deaths due to obesity with glyphosate in the US



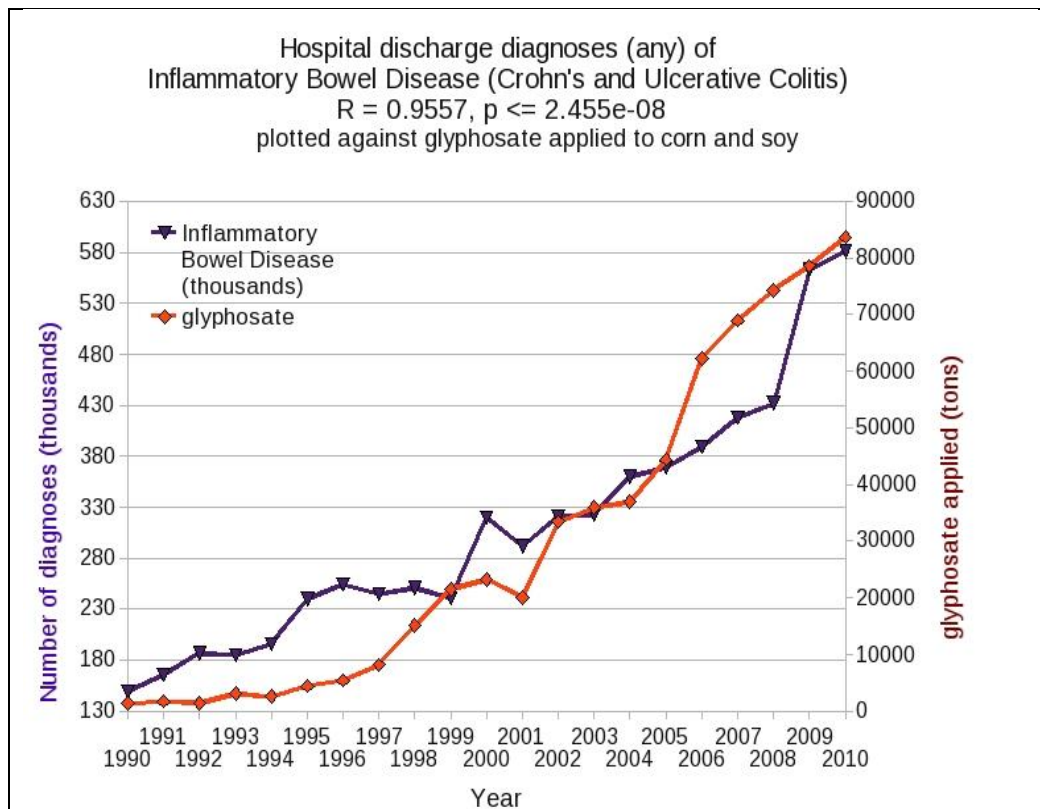
¹⁴ <http://www.mdpi.com/1099-4300/15/4/1416>

¹⁵ http://www.youtube.com/watch?v=h_AHLDXF5aw&feature=player_embedded

¹⁶ <http://www.nature.com/nature/journal/v500/n7464/abs/nature12506.html>

Graph 1. USDA data for % GE corn and soy crops planted and glyphosate applied to corn & soy plotted against % of U.S. population who are obese (BMI 30.0-99.8). Crop and glyphosate data from the USDA: obesity data from U.S. CDC. By kind permission of Dr Nancy Swanson.

Correlation between hospital discharge diagnoses of Inflammatory Bowel Disease (Crohn’s and Ulcerative Colitis) with glyphosate applied to corn & soy in the US.



Graph 2 USDA data for glyphosate applied to corn & soy plotted against % of U.S. population who have hospital discharge diagnoses of inflammatory bowel disease (Crohn’s and Ulcerative Colitis). Glyphosate data from the USDA: Crohn’s and UC data from U.S. CDC. By kind permission of Dr Nancy Swanson.

Global burden of disease study 2010 shows declines in the health of the UK and US

Between 1990 and 2010, Britain and the US have slipped down the scale of health compared with other wealthy nations and the patterns of disease are remarkably similar.

In the US: “*However, morbidity and chronic disability now account for nearly half of the US health burden, and improvements in population health in the United States have not kept pace with advances in population health in other wealthy nations*”.¹⁷ In the UK: “*The performance of the UK in terms of premature mortality is persistently and significantly below the mean of EU15+ and requires additional concerted action... premature mortality from several major causes such as cardiovascular disease and cancers... In terms of premature mortality worsening ranks are most notable for men and women aged 20-54 years. Increases in Alzheimer’s disease, breast cancer, oesophageal cancer, congenital anomalies “and a growing burden of disability, particularly from mental disorders” are all acknowledged.*”¹⁸

¹⁷ <http://www.ncbi.nlm.nih.gov/pubmed/23842577> The state of US health, 1990-2010: burden of diseases, injuries, and risk factors.

¹⁸ <http://www.ncbi.nlm.nih.gov/pubmed/23668584> UK health performance: findings of the Global Burden of Disease Study 2010

Excess risk of cancers in those exposed to pesticides (farming, commercial, home and garden)¹⁹

Abstract: A growing number of well-designed epidemiological and molecular studies provide substantial evidence that the pesticides used in agricultural, commercial, and home and garden applications are associated with excess cancer risk. This risk is associated both with those applying the pesticide and, under some conditions, those who are simply bystanders to the application. In this article, the epidemiological, molecular biology, and toxicological evidence emerging from recent literature assessing the link between specific pesticides and several cancers including prostate cancer, non-Hodgkin lymphoma, leukemia, multiple myeloma, and breast cancer are integrated. Rather than wait for human carcinogens to be identified, several European countries, including Sweden, Denmark, the Netherlands, and others, have initiated pesticide use reduction policies that have resulted in substantially diminished pesticide use overall. In the United States, a nationwide use reduction policy has met with resistance politically because of disagreements about the net benefit to health and debate concerning the disproportionate economic impact of these policies on selected groups (e.g. farmers, food processors, and pesticide manufacturers) and on food prices. Nonetheless, the available scientific evidence does strongly suggest that pesticides do cause cancer in both those who use the pesticides directly and those who are exposed because of applications others make ... “...yet the identification of specific pesticides as human carcinogens has not yet been made.”

Substantial increase in neurological deaths 1979-2010

Ten major developed Western countries and 10 smaller Western countries were studied.²⁰ There was a major reduction in general mortality in all 20 countries, but total neurological deaths rose substantially between 1980 and 2010 in both sexes in 16 out of 20 western countries. The mortality was significantly higher in females. “*Moreover, looking back 30 or more years the concept of early dementia or the need for the creation of a Young Parkinson’s Disease Society in Britain would have seemed a tautology.*”

Link between mid-life obesity and dementia: a twin study²¹

Both overweight and obesity at midlife independently increase the risk of dementia, Alzheimer’s disease and vascular dementia. Genetic and early-life environmental factors may contribute to the midlife high adiposity-dementia association.

US map for estimated agricultural use of glyphosate 2009 doesn’t include amenity use

Amenity use was reported by the US EPA in 2007 to account for about 20% weight of glyphosate used on crops.²²

¹⁹ <http://onlinelibrary.wiley.com/doi/10.3322/caac.21170/full>

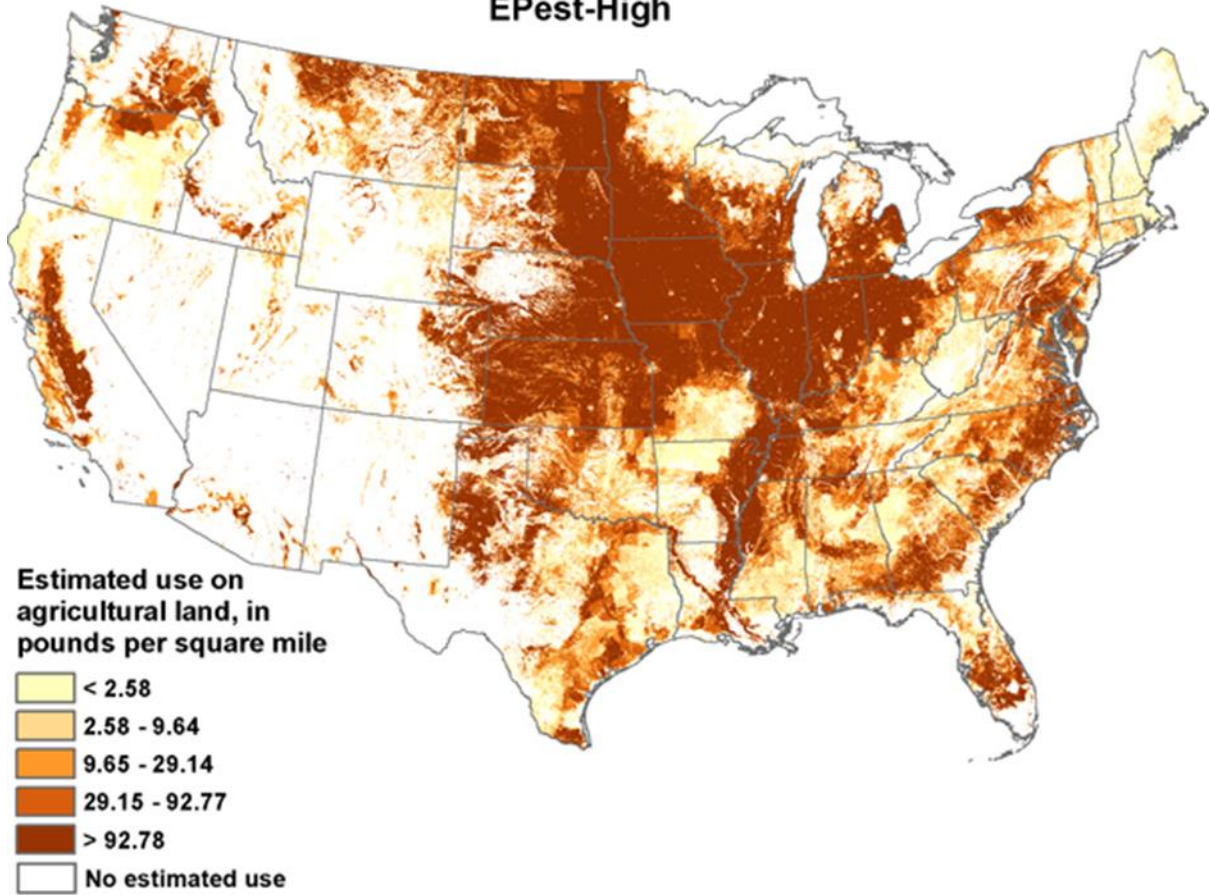
Michael C. R. Alavanja, Matthew K. Ross, Matthew R. Bonner Increased Cancer Burden Among Pesticide Applicators and Others Due to Pesticide Exposure. *CA Cancer J Clin* 2013 American Cancer Society

²⁰ <http://dx.doi.org/10.1016/j.phe.2012.12.018> Pritchard, C. et al. Changing patterns in mortality from neurological deaths in the 10 major developed countries 1979-2010 *Public Health* (2013)

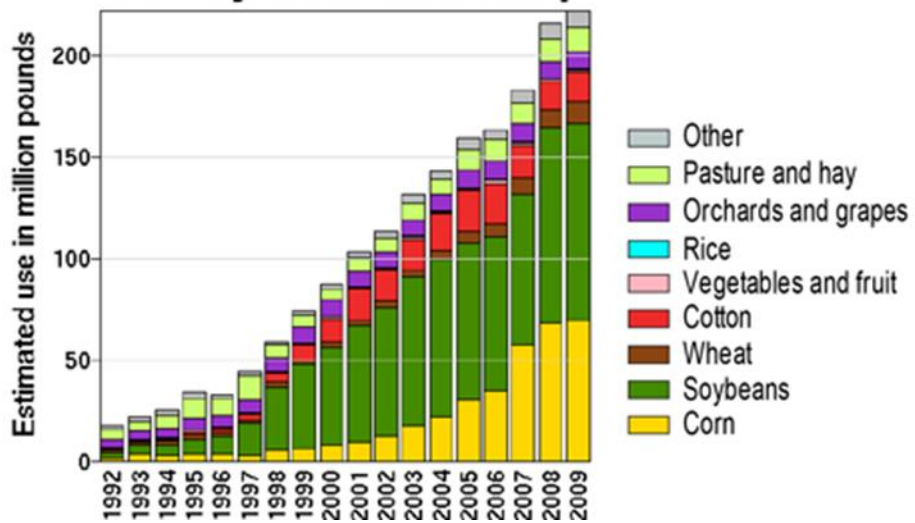
²¹ Midlife overweight and obesity increase late-life dementia risk: a population-based twin study. Xu, W.L. et al. *Neurology* <http://www.ncbi.nlm.nih.gov/pubmed/21536637>

²² http://epa.gov/pesticides/pestsales/07pestsales/usage2007_2.htm

Estimated Agricultural Use for Glyphosate , 2009 EPest-High



Use by Year and Crop



Defra has no idea about how much glyphosate is used in the amenity sector

CRD commissioned *Risk & Policy Analysis Limited* to undertake studies: Determining the Usage & Usage Pattern of Amenity Pesticides across the UK Feb 2011.²³ Two questionnaires were sent out in 2007 (for 2006) and 2010. The 2010 survey had a low response rate. The highest was in Scotland (21%) and the lowest in Wales and Ireland (0%). *“The low response rate meant that statistical analysis of the data received from the questionnaire survey would not have produced results that could be robustly defended as representing the amenity pesticide users and sub-sectors of such users”*. Instead: *“the number of case studies was approximately doubled”*(p4). *“In 2007 it was estimated that for the 2006 calendar year, 747 tonnes of active ingredient were used in plant protection product by the amenity sector, 679 tonnes (91%) of which were herbicides”*... *“In 2007, it was predicted that the use of glyphosate by the amenity sector as a whole was likely to increase following the loss of diuron – and this herbicide is likely to be the principle diuron replacement”* (p8). The surface type treated by Amenity Plant Protection Product (PPP) users in 2008 were amenity grass, sports turf, woodland, tree/shrub beds, riparian areas/areas beside water, open water/aquatic areas, gravel ballast surfaces, pavement kerbs, road and other hard surfaces, construction sites with *“a weed issue”* and treatment of broken surfaces covered with rubble (p11).

Our enquiry with the local Council about the volume of glyphosate sprayed

We enquired with our local Council because a man on a quad bike had been seen spraying the pavement kerbs in a rural area, past a school, a Doctors’ Surgery and a Public Library. In parts of South Wales, in former mining areas, invasive weeds such as Japanese knotweed and Himalayan Balsam abound. Our City and County Council only uses glyphosate, but has been given the impression that the herbicide is safe. It does not hold glyphosate records but contracts out to a commercial organisation to supply industry approved vegetation management techniques. A quote from the contractor: *“The glyphosate we use called roundup has a hazard-free label”*. From looking at the CRD commissioned studies, it was apparent that no records were held for our particular area.

The level of glyphosate in a river draining from areas of Japanese knotweed was 190 parts per trillion (ppt) and drinking water contained 30 ppt. These were of the order of concentrations found in a study in 2013 which showed that breast cancer cell proliferation is accelerated by glyphosate in extremely low concentrations: *“potential biological levels as part per trillion (ppt) to part per billion (ppb)”*.²⁴

Rotterdam Council voted to ban Roundup® from the streets because of its toxicity²⁵

“Just a short while ago, on June 27th [2013] the Rotterdam city council voted to ban Monsanto’s controversial Roundup herbicide. The initiative was begun largely thanks to a citizen run petition campaign appropriately named, “Non-toxic Sidewalks for Our Children”, along with a lot of support from the Green Party to get it passed.

While glyphosate (Roundup’s “active” ingredient) has long been believed to be quite non-toxic, recent studies have shown that to be very much untrue. The herbicide, currently the most used in the world by a large margin, has been found to be especially harmful when combined with the adjuvants labeled as “inert ingredients” which are designed to increase delivery of the pesticide to target plant”.

²³ http://www.pesticides.gov.uk/Resources/CRD/Migrated-Resources/J729_Amenity_Pesticide_Report_Final.pdf

²⁴ <http://www.ncbi.nlm.nih.gov/pubmed/23756170>

²⁵ <http://www.gmwatc.org/index.php/news/archive/2013/14865-rotterdam-bans-monsanto-s-roundup-as-part-of-new-green-initiative>

Did EFSA reapprove old herbicides in preparation for GM herbicide-tolerant crops?

The herbicide 2,4-D (one half of the infamous dioxin *Agent Orange*, which was used as a defoliant during the Vietnam War). Its effects on human health are uncertain, but veterans exposed to this chemical had increased risk of non-Hodgkin's lymphoma. Agricultural use has confirmed this association.²⁶ The US EPA has suggested it has endocrine disruption potential in mammals.²⁷ In the US in 2012, Dow applied for a GMO corn that is tolerant to 2,4-D and glyphosate.²⁸ 2,4-D was re-registered in the EU in 2002 and Greece is in the process of revising the existing MRLs in crops and in meat; many have been recommended for use. (November 2011²⁹). In 2013, a Four Corners investigation on the Australian TV found elevated levels of dangerous dioxins in a generic version of 2,4-D.³⁰ High levels were in imports from China, India and Argentina. The APVMA did not have guidelines for dioxin levels in 2,4-D. A Review is now in progress.³¹ APVMA cancelled selected 2,4-D high volatile ester (HVE) active constituent approvals, product registrations and associated label approvals, but allowed 1 year for existing stocks to be used up.

Glufosinate is an old herbicide that was banned in several European Countries. Independent research shows that it is teratogenic in mice and rats and affects the glutamate receptors in the brains of immature or foetal rats.³² It is a suspected carcinogen which doubled the incidence of birth defects in children of pest applicators. In the EU it was included in Annex 1 on 1/10/2007 and Bayer CropScience submitted an updated assessment in September 2009 which was evaluated in Sweden. Despite risks to non-target arthropods and small herbivorous mammals and a high long-term risk for mammals, the EFSA approved it in March 2012.³³ However, a study of women and their unborn children in Canada in 2011³⁴ showed 80% had pesticides in their blood. "*A metabolite of glufosinate (3-MPPA) and CryIAb toxin were clearly detectable and appear to cross the placenta to the fetus*"

No consensus on GM Crops: a statement by The European Network of Scientists for Social and Environmental Responsibility (ENSSER)³⁵

There is no scientific consensus on the safety of genetically modified foods and crops, according to a statement released on 21/10/2013 by an international group of more than 90 scientists, academics and physicians. The statement comes in response to recent claims from the GM industry and some scientists, journalists, and commentators that there is a "*scientific consensus*" that GM foods and crops were generally found safe for human and animal health and the environment. The statement calls these claims "misleading", adding, "*This claimed consensus on GMO safety does not exist.*"

"*Such claims may place human and environmental health at undue risk and create an atmosphere of complacency,*" states Dr. Angelika Hilbeck, chairperson of the European

²⁶ <http://occupationalcancer.ca/wp-content/uploads/2012/05/Hoar-1986-Agricultural-herbicide-use-and-risk-of-lymphoma-and-STs.pdf>

²⁷ *Reregistration Eligibility Decision (RED) 2,4-D*; EPA 738-R-05-002; U.S. Environmental Protection Agency, Office of Prevention, Pesticides and Toxic Substances, Office of Pesticide Programs, U.S.

²⁸ <http://www.nytimes.com/2012/04/26/business/energy-environment/dow-weed-killer-runs-into-opposition.html?pagewanted=2&r=3&>

²⁹ <http://www.efsa.europa.eu/en/efsajournal/pub/2431.htm>

³⁰ <http://www.abc.net.au/news/2013-07-22/four-corners-dangerous-dioxins/4833848>

³¹ http://www.apvma.gov.au/products/review/current/2_4_d.php

³² <http://www.ncbi.nlm.nih.gov/pubmed/9178451>

³³ <http://www.efsa.europa.eu/en/efsajournal/pub/2609.htm>

³⁴ <http://www.ncbi.nlm.nih.gov/pubmed/21338670>

³⁵ <http://www.ensser.org/increasing-public-information/no-scientific-consensus-on-gmo-safety/>

Network of Scientists for Social and Environmental Responsibility (ENSSER) and one of the signatories. *“The statement draws attention to the diversity of opinion over GMOs in the scientific community and the often contradictory or inconclusive findings of studies on GMO safety. These include toxic effects on laboratory animals fed GM foods, increased pesticide use from GM crop cultivation, and the unexpected impacts of Bt insecticidal crops on beneficial and non-target organisms,”* Dr Hilbeck continues.

This statement is released by ENSSER the week after the World Food Prize was awarded to employees of the GM seed giants Monsanto and Syngenta. This award has provoked outrage worldwide and stands in stark contrast to recent rulings in several countries restricting or banning the field release or commercialisation of certain GM crops. These include 9 countries in Europe and Mexico, but also developing countries like Bangladesh, Philippines, India, where an indefinite moratorium on field release trials was recommended by the Technical Expert Committee of the Supreme Court unless certain conditions are met, including proper safety testing. Furthermore, GMO approvals are under legal challenge in Argentina and Brazil due to questions over the scientific basis of approvals. Most if not all of them underline the lack of proof of safety and insufficient testing.

Prof C. Vyvyan Howard, a medically qualified toxicopathologist based at the University of Ulster and a signatory to the statement, said: *“A substantial number of studies suggest that GM crops and foods can be toxic or allergenic. It is often claimed that millions of Americans eat GM foods with no ill effects. But as the US has no GMO labeling and no epidemiological studies have been carried out, there is no way of knowing whether the rising rates of chronic diseases seen in that country have anything to do with GM food consumption or not. Therefore this claim has no scientific basis.”*

The signatories to the statement call for the compliance to the precautionary approach to GM crops and foods internationally agreed upon in the Cartagena Protocol on Biosafety and UN’s Codex Alimentarius. More than 230 scientists have now signed. Dr Mae Wan Ho, who has studied molecular genetics for more than 30 years, is one of the signatories. She published a Review of GM on 04/11/2013.³⁶

The New Genetics and Natural *versus* Artificial Genetic Modification³⁶

Abstract: The original rationale and impetus for artificial genetic modification was the “central dogma” of molecular biology that assumed DNA carries all the instructions for making an organism, which are transmitted via RNA to protein to biological function in linear causal chains. This is contrary to the reality of the “fluid genome” that has emerged since the mid-1970s. In order to survive, the organism needs to engage in natural genetic modification in real time, an exquisitely precise molecular dance of life with RNA and DNA responding to and participating in “downstream” biological functions. Artificial genetic modification, in contrast, is crude, imprecise, and interferes with the natural process. It drives natural systems towards maximum biosemiotic entropy as the perturbations are propagated and amplified through the complex cascades of interactions between subsystems that are essential for health and longevity.

Report on the spread of GE Oil Seed Rape³⁷

GE plants have been grown for 30 years and commercially for 20 years. The Report provides a global overview of the uncontrolled escape of GE oil seed rape in various regions of the world (US, Canada, Japan, Australia, Switzerland and Germany). In Switzerland where no

³⁶ <http://www.mdpi.com/1099-4300/15/11/4748/pdf>

Entropy 2013, 15, 4749–4781.

³⁷ www.testbiotech.de/node/891

imports of GE OSR have been allowed since 2008: “*Transgenic OSR was able to survive along rail tracks for long periods because extensive glyphosate spraying of these areas offer them selective advantages.*” In Japan: “*plants that proved to be resistant to glyphosate or glufosinate were found at ports and along transportation routes to industry plants where OSR is processed.*”

Transgene Escape: Global atlas of uncontrolled spread of genetically engineered plants³⁸

This report makes several recommendations. Most importantly, measures should be put in place immediately to stop any further uncontrolled spread of genetically engineered plants into the environment as far as possible. Comprehensive regulation should be established to strengthen the precautionary principle and the release of genetically engineered organisms should not be allowed if they cannot be retrieved.

How has the Agrochemical Industry managed to convince people that GMO and pesticides are safe?

By money spent on advertising, lobbying and campaigns

“Given the unvarnished facts, how has Monsanto been able to convince anyone that it is, according to its latest PR effort, “improving agriculture and improving lives”? In large part, by spending tens of millions of dollars annually on advertising, lobbying and campaign contributions.³⁹ Last year, Monsanto spent \$100 million on the ad campaign, down slightly from the \$120 million it spent in 2010, according to Securities and Exchange Commission figures. The company also spent \$6.37 million on lobbying--more than any other agricultural company or trade group--and so far has contributed more than \$170,000 to political campaigns in the 2011-2012 election cycle, the third highest in the agricultural sector.”

In August 2011 Obama appointed former Monsanto Vice-President and Attorney, Michael Taylor, as Senior Advisor to the Commissioner of the FDA and on 30th May 2013 he was elevated to the position of Food Tzar.⁴⁰

Money spent on opposing California’s Right- to-Know ballot initiative (Prop 37)

On 06/11/2012 the vote to make labelling of GM mandatory was unsuccessful, by a small margin. There is a link to the California Secretary of State’s website where she posted the amounts of money that the big corporations have thrown in the ring to stop it happening.⁴¹

“As we have emphasized repeatedly, the November 6th Right-to-Know Ballot Initiative in California (Proposition 37) is the Food Fight of Our Lives. The popular Initiative, supported by the overwhelming majority of Californians, calls for mandatory labeling of genetically engineered foods and an end to the unethical practice, unfortunately common even in the alternative food sector, of marketing or labeling GMO-tainted food as “natural.”

Opposing GMO labelling battle (illegally) in Washington State 06/11/2013

The largest single donor to the “no” to GMO labelling campaign, the Grocery Manufacturers’ Association (GMA), is currently facing a money laundering lawsuit from the state Attorney

³⁸ http://www.testbiotech.org/sites/default/files/Testbiotech_Transgene_Escape.pdf

³⁹ http://www.huffingtonpost.com/elliott-negin/monsantos-great-expectati_b_1267494.html

⁴⁰ <http://investmentwatchblog.com/obama-appoints-monsanto-vp-to-food-safety-czar/>

⁴¹ <http://cal-access.sos.ca.gov/Campaign/Committees/Detail.aspx?id=1344135&session=2011&view=late1>
<http://www.organicconsumers.org/bytes/ob339.htm>

General.⁴² They tried to hide their actual donors from the public thus contravening state laws. *“They dumped more than \$22 million into fighting against GMO labeling. Exactly \$550 of the “no” campaign’s dollars came from inside Washington State. This was a classic example of out-of-state corporate interests pouring massive money into maintaining control of our food systems.”* Attorney General Ferguson: Public Disclosure Commission.⁴³

Cash Contributions for: Grocery Manufacturers Association against I-522. There was a total of 180 donors; (these excluded the Agrochemical Industry).

Dr Nancy Swanson wrote an Open letter to the Grocery Manufacturers’ Association.⁴⁴ She asked them to submit a sample of each of their products to an independent laboratory for testing once a year for the following pesticides; glyphosate, glufosinate, 2,4-D and hexane. In addition, she asked that each item should be tested for DNA sequences from all the organisms that scientists have genetically modified: (e.g *Cauliflower Mosaic Virus*, *Bacillus thuringiensis* (Bt toxin), *Agrobacterium tumefaciens* etc.) and any other organism that the industry has used to make food and feed and which they have convinced the regulators is “substantially equivalent” to natural food and is thus exempt from testing.

UK Ministers push for GM foods for the public, but not for themselves

Despite a recent drive by Owen Paterson and other Government Ministers for GMO technology to be more widely accepted by the public, the House of Commons continue to bar genetically modified food from its restaurants and cafés.⁴⁵ In 1999, Monsanto, the biggest promoter of genetically modified food, was hoist with its own petard when it was disclosed that it had a staff canteen in which GM produce is banned.⁴⁶

By money spent on suing, or threatening to sue, people/organisations

Syngenta threatened to sue EFSA. On 15th January 2013, the day before EFSA announcement that there would be a two year moratorium from Dec 2014 on three neonicotinoids (imidacloprid, clothianidin and thiamethoxam) on crops with flowers that were attractive to bees, Syngenta asked EFSA to change its press release.⁴⁷ *“We ask you to formally confirm that you will rectify the press release by 11 o’clock. Otherwise you will appreciate that we will consider our legal options.”*

⁴² <http://www.atg.wa.gov/uploadedFiles/Complaint-20131016-Conformed.pdf> Attorney General Ferguson. Public Disclosure Commission. Secret illegal donations to the Grocery Manufacturers Association from 180 corporations including Del Monte, the Coca-Cola Company, Pepsico, Nestle USA, Campbell Soup Company, Ocean Spray Cranberries, Kellogg’s and General Mills.

⁴³

<http://www.pdc.wa.gov/MvcQuerySystem/CommitteeData/contributions?param=R1JPQ01BIDAwNQ===&year=2013&type=initiative>

⁴⁴ <http://www.examiner.com/article/open-letter-to-the-grocery-manufacturers-association>

⁴⁵ <http://www.telegraph.co.uk/earth/environment/10135908/GM-foods-kept-off-the-menu-at-Westminster.html>

The House of Commons is continuing to bar genetically modified food from its restaurants and cafés, despite a drive by ministers for the technology to be more widely accepted.

⁴⁶ <http://www.independent.co.uk/environment/gm-food-banned-in-monsanto-canteen-737948.html>

⁴⁷

http://corporateeurope.org/sites/default/files/letter_and_fax_interexchange_between_syngenta_ashurst_lawyers_and_efsaf.pdf

Exchange of letters between Syngenta, Bayer CropScience and EFSA⁴⁸ Bayer Crop Science had commissioned an ‘independent panel of bee scientists’ to review the EFSA Report. The Report from Exponent Inc. was attached. The final conclusions were: “*numerous studies conducted under relevant field conditions in different member states consistently demonstrated that honeybees are not harmed by neonicotinoid seed treatment, if applied properly*”. Dr Caroline Harris, Corporate Vice-President of Exponent, is a current member of the UK Advisory Committee on Pesticides. The first author of a 2013 Review claiming there was no compelling evidence to link pesticides to neurobehavioral effects in children worked for Dow (the manufacturer of chlorpyrifos, an organophosphate).⁴⁹ The other authors described themselves as working for, or having worked for: “*Exponent, Inc., a research and scientific consultant firm with clients from industry (including crop protection) and government*”. The Review was funded by the Crop Protection Association.

Syngenta has submitted a legal challenge to the European Commission’s decision to suspend the use of thiamethoxam on bee attractive crops.⁵⁰ “*The Commission took the decision on the basis of a flawed process, an inaccurate and incomplete assessment by the European Food Safety Authority and without the full support of EU Member States....In suspending the product it breached EU pesticide legislation and incorrectly applied the precautionary principle*”. Basel Switzerland 27 August 2013.

Bayer CropScience sues the European Commission⁵¹ A subsidiary of Bayer AG (FWB: BAYN) is challenging Europe’s recent ban on a class of pesticides believed to be killing off millions of bees. The two-year ban on neonicotinoids, a controversial class of insecticides, was enacted in May by the European Commission following recent scientific evidence linking the chemical to the global crash of bee populations. Bayer CropScience is calling the ban “unjustified,” saying it goes beyond the commission’s existing regulatory framework. The German chemical giant also said the commission failed to take into account other factors that are contributing to bee die-offs, including, it says, loss of habitats, extreme environmental and climatic factors and lack of genetic diversity.

Monsanto threatened to sue EFSA over the publication of the data⁵² on the company’s GM Maize NK603, on which Prof Séralini performed a 2-year study on rats. Tumours started to appear at 4 months (see below). Monsanto only tests GMOs for 90 days.

Séralini’s 2-year feeding study provoked chronic hormone and sex dependent pathologies in rats; males developed tumours at 4 months and females at 7 months⁵³
“*The health effects of a Roundup®-tolerant genetically modified maize (from 11% in the diet), cultivated with or without Roundup® and Roundup® alone (from 0.1 ppb in water), were studied 2 years in rats. In females, all treated groups died 2–3 times more than controls, and more rapidly. This difference was visible in 3 male groups fed GMOs. All results were hormone and sex dependent, and the pathological profiles were comparable. Females*

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http://corporateeurope.org/sites/default/files/letter_interexchange_between_syngenta_bayer_and_efsa.pdf

⁴⁹ <http://dx.doi.org/10.1080/10937404.2013.783383>

⁵⁰ <http://www.syngenta.com/global/corporate/en/news-center/news-releases/pages/130827.aspx>

⁵¹ <http://www.ibtimes.com/bayer-cropscience-fights-europes-pesticide-ban-petition-blasts-bee-killing-chemical-giant-1403820>

⁵² <http://www.efsa.europa.eu/en/press/news/130114.htm>

⁵³ <http://dx.doi.org/10.1016/j.fct.2012.08.005> Séralini, G-E *et al.* Long term toxicity of a Roundup® herbicide and a Roundup®-tolerant genetically modified maize. *Food Chem Toxicol.* November 2012, 50: 4221–423194.

developed large mammary tumours almost always more often than, and before, controls, the pituitary was the second most disabled organ; the sex hormonal balance was modified by GMO and Roundup® treatments. In treated males, liver congestions and necrosis were 2.5–5.5 times higher. This pathology was confirmed by optic and transmission electron microscopy. Marked and severe kidney nephropathies were also generally 1.3–2.3 greater. Males presented 4 times more large palpable tumours (kidney) than controls which occurred up to 600 days earlier. Biochemistry data confirmed very significant kidney chronic deficiencies; for all treatments and both sexes, 76% of the altered parameters were kidney related. These results can be explained by the non-linear endocrine-disrupting effects of Roundup®, but also by the overexpression of the transgene in the GMO and its metabolic consequences.”

Highlights:

- A Roundup®-tolerant maize and Roundup® provoked chronic hormone and sex dependent pathologies.
- Female mortality was 2–3 times increased mostly due to large mammary tumours and disabled pituitary.
- Males had liver congestions, necrosis, severe kidney nephropathies and large palpable tumours.
- This may be due to an endocrine disruption linked to Roundup® and a new metabolism due to the transgene.
- GMOs and formulated pesticides must be evaluated by long term studies to measure toxic effects.

This 12-minute You Tube video follows the whole 2-year experiment by Séralini’s team in the CRIIGEN laboratory.

http://www.youtube.com/watch?v=Njd0RugGjAg&feature=player_embedded

The differences between GM and non-GM corn shows the depletion of micronutrients Note the high levels of formaldehyde

Ingredient	Parts per million (ppm)	
	GM corn	Non-GM corn
Glyphosate	13	0
Formaldehyde	200	0
Nitrogen	7	46
Phosphorus	3	44
Potassium	7	113
Calcium	14	6 130
Magnesium	2	113
Sulphur	3	42
Manganese	2	14
Iron	2	14
Zinc	2.3	14.3
Copper	2.6	16
Molybdenum	0.2	1.5
Boron	0.2	1.5
Selenium	0.6	0.3
Cobalt	0.2	1.5

The results of a comparison of GM and non-GM corn from adjacent Midwest fields in the US that first appeared on the Moms Across America March website are reproduced in Table 1.⁵⁴

The British Government has gone one step too far against civil society

On September 23rd 2013, the British Government joined forces with Monsanto, EFSA and the EU Commission to fight civil society in the EU Court to defend the right to import Monsanto's transgenic soybean Intacta® which produces an insecticide and is resistant to glyphosate herbicides such as Roundup®. This will involve even more glyphosate residues in human food and animal feed. <http://www.testbiotech.de/en/node/898>

The rights of civil society are being defended by:

Christoph Then: info@testbiotech.org www.testbiotech.org Testbiotech is the organisation coordinating the lawsuit and is asking for the public to support it.

ENSSER; European Network of Scientists for Social and Environmental Responsibility: www.ensser.org

Foundation on Future Farming: www.zs-l.de

Manfred-Hermsen-Stiftung: www.m-h-s.org

Sambucus: www.sambucus.org

Society for Ecological Research: www.oekologische-forschung.de

German Family Farmers Association: www.abl-ev.de

This action was confirmed in the answer to a Written Question in the House of Lords⁵⁵ *Monday 18 November 2013*

Agriculture: Genetically Modified Crops

Question Asked by: The Countess of Mar:

To ask Her Majesty's Government which member of the Government is responsible for the United Kingdom's approach in the case before the Court of Justice of the European Union regarding the decision of the European Food Safety Authority to allow genetically-modified soya beans to be marketed by Monsanto in the European Union; and whether any organisations are contributing to Her Majesty's Government's legal costs in that case. [HL3054]

The Parliamentary Under-Secretary of State, Department of Health (Earl Howe)

(Con): The United Kingdom has a strong interest in the science-based system underpinning genetically modified product applications and so has applied to intervene in this case, which concerns the authorisation of genetically modified food and feed. Any intervention will represent the view of the Government as a whole and the only likely external legal costs will be those from instructing counsel and costs of attending any hearing should that prove necessary.

This document was compiled by Rosemary Mason MB ChB FRCA, using information from a global network of independent scientists, toxicologists, beekeepers, environmentalists, Governments, Industry and Regulators. With grateful thanks to Anthony Samsel, Dr Stephanie Seneff and Dr Nancy Swanson; however, the responsibility for the contents of this paper lies with the author. 21/11/2013.

⁵⁴ http://www.i-sis.org.uk/Stunning_differences_of_GM_from_non_GM_corn.php

⁵⁵ http://www.publications.parliament.uk/pa/ld201314/ldhansrd/text/131118w0001.htm#w_a_st_0