

Close relationships between the British Government, the Agrochemical Industry, the European Food Safety Authority and the European Commission

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Genetically Engineered Foods: The Biggest Fraud in the History of Science¹

Governments and leading scientific institutions have systematically misrepresented the facts about GMOs and the scientific research that casts doubt on their safety

On 4 March 2015 the Organisation Beyond GM facilitated the Press Release of American public interest attorney Steven Druker's acclaimed new book, [Altered Genes, Twisted Truth. How the Venture to Genetically Engineer Our Food Has Subverted Science, Corrupted Government and Systematically Deceived the Public.](#)²

His book reveals how governments and leading scientific institutions have systematically misrepresented the facts about GMOs and the scientific research that casts doubt on their safety.³

¹ Altered Genes, Twisted Truth: Steven M Druker. How the Venture to Genetically Engineer Our Food Has Subverted Science, Corrupted Government and Systematically Deceived the Public. 2015 Clear River Press. page 384

² <http://beyond-gm.org/new-book-exposes-systematic-government-and-scientific-fraud-over-gm-food/>

³ <http://www.gmwatch.org/index.php/news/archive/2015-articles/15973>

GM Watch reported: “The book features a foreword by the renowned primatologist Dame Jane Goodall, who will also speak at the conference, hailing it as “without doubt one of the most important books of the last 50 years.”

The book’s revelations come at a crucial time when the UK is considering the commercial planting of GM crops following the European Parliament’s decision to allow member states to opt out of the blockade that has barred them from the EU until now. Based on the evidence presented in the book, Druker and Goodall will assert that it would be foolhardy to push forward with a technology that is unacceptably risky and should never have been allowed on the market in the first place. The book is the result of more than 15 years of intensive research and investigation by Druker, who came to prominence for initiating a lawsuit against the US Food and Drug Administration (FDA).

Steven Druker initiated a lawsuit against the US Food and Drug Administration (FDA) that forced it to open its files on GM foods

Those files revealed that GM foods first achieved commercialisation in 1992 only because the FDA:

* Covered up the extensive warnings of its own scientists about their dangers

* Lied about the facts

* And then violated federal food safety law by permitting these foods to be marketed without having been proven safe through standard testing

“Druker’s well-referenced book points out that if the FDA had actually heeded its own experts’ advice, told the truth, and obeyed the law, the GM food venture would have imploded and never gained traction anywhere.” There were extensive media resources⁴ but the launch failed to be reported in the newspapers. It is not surprising since many august bodies, scientific journals and philanthropists in the UK & US are supporting GM.⁵

Druker challenges UK Royal Society over misleading statements made about GM foods

Open Letter to the UK Royal Society can be read here.⁶

Extracts: “Because clarifying the facts about GM foods is crucial for developing an intelligent, science-based policy on the future of agriculture, and because the Royal Society has significantly contributed to the confusion that currently surrounds this issue, it is imperative that remedial action be promptly initiated. This is especially so considering that:

- The European Commission is about to approve substantial regulatory changes in regard to GM crops.
- The UK is seriously considering allowing them to be commercially planted.
- The Society and other proponents of GM foods have inculcated the widespread illusion that there is an overwhelming scientific consensus that the safety of these products has been established through rigorous testing...”

Unless you promptly take these steps, it will demonstrate that your commitment to promoting GM foods is stronger than your commitment to honoring the truth and upholding the integrity of science. FURTHER, whether or not you own up to your irresponsible actions and take the steps specified above, I challenge you to read my book and specifically list any inaccurate statements of fact that you find in it, accompanied by an explanation of why the statement is erroneous and a reference to the evidence that corroborates your assertion.”

⁴ <http://beyond-gm.org/altered-genes-twisted-truth-media-resources/>

⁵ Royal Society, Wellcome Foundation, Bill & Melinda Gates, Lord David Sainsbury and the Gatsby Foundation, Rothamsted Research, John Innes Centre, Sainsbury Laboratory, Civil Servants from Defra, NFU, James Hutton Institute, BIS, Offices of Life Sciences, Centre for Food Security, Food Standards Agency, etc.

⁶ http://beyond-gm.org/wp-content/uploads/2015/03/DRUKER_OPEN-LETTER-TO-THE-ROYAL-SOCIETY_Final.pdf

Three years ago, a secret meeting was held between the Agricultural Biotechnology Council (ABC), representing industry, two UK Ministers, two MPs, Civil Servants, Scientists and NFU to discuss the barriers to introducing Genetically Modified Crops (GM) into Britain and how to overcome them. On 25th October 2012 Dr Helen Wallace Director of Genewatch and Pete Riley Campaign Manager GM Freeze published a Press Release:⁷ Monsanto meets Ministers to push return of GM crops to Britain. On 26 June 2012, Roundtable discussion on 'Going for Growth': Realising the potential of agricultural technologies in the UK. Attendees⁸ included Government Ministers, MPs, Civil Servants from Defra, the Department of Business, Innovations and Skills, Office of Life Sciences, Director of the Centre for Food Security, John Innes Centre, Rothamsted Research, James Hutton Institute, the National Farmers Union and the Agricultural and Horticultural Development Board. Here are the links to the Agenda⁹ and a summary of the meeting.¹⁰ The ABC had also communicated with the Food Standards Agency (FSA). These organisations have colluded with industry.

Glyphosate, destroyer of human health and global biodiversity

World Health Organisation's International Agency for Research on Cancer (IARC) has declared glyphosate as a 2A carcinogen (probably carcinogenic in humans)

The IARC reached its decision based on the view of 17 experts from 11 countries, who met in Lyon, France, to assess the carcinogenicity of 5 organophosphate pesticides.¹¹

"In male CD-1 mice, glyphosate induced a positive trend in the incidence of a rare tumour, renal tubule carcinoma. A second study reported a positive trend for haemangiosarcoma in male mice. Glyphosate increased pancreatic islet-cell adenoma in male rats in two studies. A glyphosate formulation promoted skin tumours in an initiation-promotion study in mice. Glyphosate has been detected in the blood and urine of agricultural workers, indicating absorption. Soil microbes degrade glyphosate to aminomethylphosphoric acid (AMPA). Blood AMPA detection after poisonings suggests intestinal microbial metabolism in humans. Glyphosate and glyphosate formulations induced DNA and chromosomal damage in mammals, and in human and animal cells in vitro. One study reported increases in blood markers of chromosomal damage (micronuclei) in residents of several communities after spraying of glyphosate formulations. Bacterial mutagenesis tests were negative. Glyphosate, glyphosate formulations, and AMPA induced oxidative stress in rodents and in vitro. The Working Group classified glyphosate as "probably carcinogenic to humans" (Group 2A)." This is the first influential institute that has taken into account independent science. However, the IARC Monograph Volume 112 20/03/2015¹² has no legal power to ban glyphosate. "The Monographs Programme provides scientific evaluations based on a comprehensive review of the scientific literature, but it remains the responsibility of individual governments and other international organizations to recommend regulations, legislation, or public health intervention."

⁷ <http://www.genewatch.org/article.shtml?als%5Bcid%5D=569457&als%5Bitemid%5D=571449>

⁸ <http://tinyurl.com/9jbce4g>

⁹ <http://tinyurl.com/8ahylza>

¹⁰ <http://tinyurl.com/92rrain>

¹¹ [http://www.thelancet.com/pdfs/journals/lanonc/PIIS1470-2045\(15\)70134-8.pdf](http://www.thelancet.com/pdfs/journals/lanonc/PIIS1470-2045(15)70134-8.pdf) Carcinogenicity of tetrachlorvinphos, parathion, malathion, diazinon, and glyphosate.

¹² <http://www.iarc.fr/en/media-centre/iarcnews/pdf/MonographVolume112.pdf>

Monsanto, which produces the glyphosate-containing herbicide, Roundup®, strongly disagreed with the decision. "All labeled uses of glyphosate are safe for human health," said Phil Miller, a Monsanto spokesman, in a statement.¹³

In 2011 Earth Open Source challenged the European Commission. "Independent scientific literature shows glyphosate causes endocrine disruption, damage to DNA, reproductive and developmental toxicity, neurotoxicity, and cancer as well as birth defects"

The last reassessment in Europe of glyphosate, the most widely used herbicide, was in 2002.¹⁴ It was due to be reassessed in 2012.

In 2011, a multinational paper written by eight experts, the authors challenged the European Commission about its continued registration of Roundup®. Roundup and Birth Defects: is the public being kept in the dark?¹⁵ They said: "*The European Commission has previously ignored or dismissed many other findings from the independent scientific literature showing that Roundup® and glyphosate cause endocrine disruption, damage to DNA, reproductive and developmental toxicity, neurotoxicity, and cancer, as well as birth defects. Many of these effects are found at very low doses, comparable to levels of pesticide residues found in food and the environment.*"..."*This issue is of particular concern now that Monsanto and other producers of genetically modified seed are trying to get their glyphosate-tolerant crops approved for cultivation in Europe. If the EU Commission gives its approval, this will lead to a massive increase in the amount of glyphosate sprayed in the fields of EU member states, as has already happened in North and South America. Consequently, people's exposure to glyphosate will increase.*"

"Shortly after the European Commission was notified of the latest research showing that glyphosate and Roundup® caused birth defects, it quietly passed a directive delaying the review of glyphosate and 38 other dangerous pesticides until 2015" (including the highly toxic 2,4-D and diquat).

The EU Commissioner for Health, John Dalli, resigned on 12/10/2012 after an anti-fraud inquiry linked him to an attempt to influence tobacco legislation.¹⁶ He denied the allegation.

The same authors challenged the German RMS and the Regulatory Decisions in Europe

Antoniou, M., *et al.* Teratogenic Effects of Glyphosate-Based Herbicides: Divergence of Regulatory Decisions from Scientific Evidence. *J Environ Anal Toxicol* 2012, S:4¹⁷

Abstract: *The publication of a study in 2010, showing that a glyphosate herbicide formulation and glyphosate alone caused malformations in the embryos of Xenopus laevis and chickens through disruption of the retinoic acid signalling pathway, caused scientific and regulatory controversy. Debate centred on the effects of the production and consumption of genetically modified Roundup Ready® soy, which is engineered to tolerate applications of glyphosate herbicide. The study, along with others indicating teratogenic and reproductive effects from glyphosate herbicide exposure, was rebutted by the German Federal Office for Consumer Protection and Food Safety, BVL, as well as in industry-sponsored papers. These rebuttals relied partly on unpublished industry-sponsored studies commissioned for regulatory purposes, which, it was claimed, showed that glyphosate is not a teratogen or reproductive toxin. However, examination of the German authorities' draft assessment report on the industry studies, which underlies glyphosate's EU authorisation, revealed further evidence of glyphosate's teratogenicity. Many of the malformations found were of the type defined in the scientific literature as associated with retinoic acid teratogenesis. Nevertheless, the German*

¹³ <http://www.usnews.com/news/business/articles/2015/03/20/popular-weed-killer-deemed-probable-carcinogen-by-un>

¹⁴ http://ec.europa.eu/food/plant/protection/evaluation/existactive/list1_glyphosate_en.pdf

¹⁵ <http://earthopensource.org/earth-open-source-reports/roundup-and-birth-defects-is-the-public-being-kept-in-the-dark/>

¹⁶ http://europa.eu/rapid/press-release_MEMO-12-788_en.htm

¹⁷ <http://omicsonline.org/2161-0525/2161-0525-S4-006.php?%2520aid=7453>

and EU authorities minimized these findings in their assessment and set a potentially unsafe acceptable daily intake (ADI) level for glyphosate. This paper reviews the evidence on the teratogenicity and reproductive toxicity of glyphosate herbicides and concludes that a new and transparent risk assessment needs to be conducted. The new risk assessment must take into account all the data on the toxicity of glyphosate and its commercial formulations, including data generated by independent scientists and published in the peer-reviewed scientific literature, as well as the industry-sponsored studies.

Commercial formulations of herbicides induce changes in antibiotic response to *E.Coli* and *S.enterica* serovar Typhimurium; they are biocides

Four different patents have been filed for glyphosate in the US by Monsanto (and granted)

- As a chelator of heavy metals (used to clean boilers) and a wetting agent in 1961¹⁸
- As a herbicide in 1968¹⁹
- As an antibiotic in 2002²⁰
- As an anti-protozoal agent in 2003²¹

“Antibiotic-resistant diseases pose an 'apocalyptic' threat to humans.” Vets, farmers and GPs were blamed for overuse of antibiotics.²² In 2013, the Chief Medical Officer told MPs that this issue should be added to the national risk register of civil emergencies. In March 2014 I wrote to inform her that glyphosate had been patented as an antibiotic. I finally had a reply: “Given the detailed regulatory regime for plant protection products, this is the most appropriate place for these issues to be considered.”

When Prof Mark Woolhouse, Professor of Infectious Disease Epidemiology at the University of Edinburgh, and Dr Jeremy Farrar, Director of the Wellcome Trust, published an article in *Nature* on 29/04/2014 about the Intergovernmental Panel on Antimicrobial Resistance²³ I wrote to inform them that glyphosate had been patented as an antibiotic, but received no reply. Here is a scientific paper that confirms it.

Herbicides dicamba, 2,4-D and glyphosate are biocides which have sub-lethal effects on microbes

Kurenbach, B, *et al.* Sublethal Exposure to Commercial Formulations of the Herbicides Dicamba, 2,4-Dichloro- phenoxyacetic Acid, and Glyphosate Cause Changes in Antibiotic Susceptibility in *Escherichia coli* and *Salmonella enterica* serovar Typhimurium. *Mbio; Journal for the American Society of Microbiology*. 2015; Vol 6 1-9.²⁴

ABSTRACT *Biocides, such as herbicides, are routinely tested for toxicity but not for sublethal effects on microbes. Many biocides are known to induce an adaptive multiple-antibiotic resistance phenotype. This can be due to either an increase in the expression of efflux pumps, a reduced synthesis of outer membrane porins, or both. Exposures of Escherichia coli and Salmonella enterica serovar Typhimurium to commercial formulations of three herbicides—dicamba (Kamba), 2,4-dichlorophenoxyacetic acid (2,4-D), and glyphosate (Roundup)—were found to induce a changed response to antibiotics. Killing curves in the presence and absence of sublethal herbicide*

¹⁸ <http://www.google.com/patents/US3160632>

¹⁹ <http://www.google.com/patents/US3455675>

²⁰ <http://www.google.com/patents/US7771736>

²¹ <http://patft.uspto.gov/netacgi/nph->

<Parser?Sect1=PTO1&Sect2=HITOFF&d=PALL&p=1&u=%2Fnetacgi%2FPTO%2Fsrchnum.htm&r=1&f=G&l=50&s1=7771736.PN.&OS=PN/7771736&RS=PN/7771736>

²² <http://www.theguardian.com/society/2013/jan/23/antibiotic-resistant-diseases-apocalyptic-threat>

²³ <http://www.nature.com/news/policy-an-intergovernmental-panel-on-antimicrobial-resistance-1.15275>

²⁴ <http://mbio.asm.org/content/6/2/e00009-15.full.pdf+html>

concentrations showed that the directions and the magnitudes of responses varied by herbicide, antibiotic, and species. When induced, MICs of antibiotics of five different classes changed up to 6-fold. In some cases the MIC increased, and in others it decreased. Herbicide concentrations needed to invoke the maximal response were above current food maximum residue levels but within application levels for all herbicides. Compounds that could cause induction had additive effects in combination. The role of *soxS*, an inducer of the AcrAB efflux pump, was tested in β -galactosidase assays with *soxS-lacZ* fusion strains of *E. coli*. Dicamba was a moderate inducer of the *sox* regulon. Growth assays with Phe-Arg β -naphthylamide (PABN), an efflux pump inhibitor, confirmed a significant role of efflux in the increased tolerance of *E. coli* to chloramphenicol in the presence of dicamba and to kanamycin in the presence of glyphosate. Pathways of exposure with relevance to the health of humans, domestic animals, and critical insects are discussed.

IMPORTANCE Increasingly common chemicals used in agriculture, domestic gardens, and public places can induce a multiple antibiotic resistance phenotype in potential pathogens. The effect occurs upon simultaneous exposure to antibiotics and is faster than the lethal effect of antibiotics. The magnitude of the induced response may undermine antibiotic therapy and substantially increase the probability of spontaneous mutation to higher levels of resistance. The combination of high use of both herbicides and antibiotics in proximity to farm animals and important insects, such as honeybees, might also compromise their therapeutic effects and drive greater use of antibiotics. To address the crisis of antibiotic resistance requires broadening our view of environmental contributors to the evolution of resistance.

The regulatory regime in which the CMO had such faith failed. The German Rapporteur Member State recommended re-approval of glyphosate to the European Food Safety Authority (EFSA)

Professor Dr Dr Andreas Hensel President of the Federal Institute of Risk Assessment (BfR) at a Press release in March 2014 said on behalf of BfR: “These new studies do not suggest that glyphosate has carcinogenic or embryo-damaging properties or that it is toxic to reproduction **in test animals**. The data do not warrant any significant changes in the limit values of the active ingredient... Worldwide, glyphosate is one of the most common active ingredients in pesticides used to prevent unwanted plant growth in plant cultivation or to accelerate the ripening process of crops (desiccation). Glyphosate inhibits an enzyme (5-enolpyruvylshikimate- 3-phosphate synthase) which is essential for the biosynthesis of certain amino acids. This enzyme is not found in animals and humans.”²⁵

This final statement by the German BfR is wrong: glyphosate poisons humans in the same way as it poisons plants. Humans and animals have exactly the same pathway as in plants; mammals can only absorb nutrients via the bacteria in their gut; the gut microbiome. The gut microbiome is the collective genome of organisms inhabiting our body.²⁶ Pesticide scientists and plant scientists have based their assessment of herbicides on complete ignorance of human physiology. UK public health experts and physicians in the Wellcome Trust and the Royal Society have failed to question the accuracy of the assessors’ knowledge.

ADAS recommended pre-harvest spraying of glyphosate on crops and spraying on grassland, but the first papers had been written by Monsanto scientists without declarations of conflict and without peer-review

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http://www.bfr.bund.de/en/press_information/2014/03/glyphosate_no_more_poisonous_than_previously_assumed_although_a_critical_view_should_be_taken_of_certain_co_formulants-188898.html

²⁶ <http://www.nature.com/nature/journal/v500/n7464/abs/nature12506.html>

ADAS recommended pre-harvest crop spraying with Roundup® in 1980²⁷ and spraying on grassland in 1985. Researches showed two Monsanto scientists wrote the first papers (without declaring it)

In 1980 UK ADAS²⁸ (at that time the science and advisory branch of Ministry of Agriculture, Fisheries and Food (MAFF) but now privatised) was recommending that arable farmers use pre-harvest application of glyphosate on cereal crops. M.G. O’Keeffe, a Monsanto scientist²⁹ wrote three articles about it, the first at a Crop Protection conference.³⁰ They do not appear to have been peer-reviewed. By 1985 ADAS was advocating the use of glyphosate on grassland. They declared it to be good practice to graze the grass or preserve it as hay or silage after treatment.³¹ However, the main author of the paper was another Monsanto scientist, Colin D Stride.³² He later joined Exponent®, a firm which provides services for industry, governments and for EU regulatory bodies.³³

In a 4-month project starting in the UK in January 2007: Pre-harvest glyphosate for weed control and as a harvest aid in cereals³⁴ the authors stated in their introduction:

“Concern over residues, as expressed by the Food Safety Authority Report, appears to relate to the incidence of residues rather than to the levels of the residues. Data from Monsanto and Cessna et al. (1994 & 2002) suggest that the level of residues is associated with dose but that even the lower doses used for harvest aid will leave detectable levels at harvest. Hence, any initiative to reduce the incidence of residues must be to reduce the proportion of the crop sprayed rather than to reduce the dose of the individual applications.” However, they do not appear to have performed any glyphosate residue measurements.

The manufacturers succeeded in having glyphosate re-registered in 2002

When glyphosate was being re-assessed in Europe in 2002, the German Rapporteur Member State received a letter from a British farmer via the UK Pesticides Safety Directorate, written on 4 May 1999, giving first hand evidence of the toxicity of glyphosate to humans and animals, and the reporting of its toxicity in independent research papers.³⁵ The farmer made a very perceptive comment: *“This is an unsatisfactory and dangerous situation, not just for the victims directly involved, but for the entire population of the world, since if the manufacturers have their way our*

²⁷ <http://www.hgca.com/media/185527/is02-pre-harvest-glyphosate-application-to-wheat-and-barley.pdf>

²⁸ ADAS is now the UK’s largest independent provider of agricultural and environmental consultancy, rural development services and policy advice; formerly a branch of Ministry of Agriculture, Fisheries & Food. (MAFF)

²⁹ https://books.google.co.uk/books?id=objYBAAQBAJ&pg=PA555&lpg=PA555&dq=Monsanto+O%27Keeffe+MG&source=bl&ots=3k7GWMRWZ3&sig=wg0ZhiNFMTY86cNp_cp3jV4Dz3A&hl=en&sa=X&ei=Twz-VPmWA8mBU93GgggP&ved=OCEkQ6AEwBg#v=onepage&q=Monsanto%20O'Keeffe%20MG&f=false Chemical Manipulation of Crop Growth and Development Proceedings of Previous Easter Schools in Agricultural Science by J. S. McLaren

³⁰ O’Keeffe MG. The control of Agropyron repens and broad-leaved weeds pre-harvest of wheat and barley with the isopropylamine salt of glyphosate; 1980. pp. 53–60. Proceedings of British Crop Protection Conference-Weeds.

³¹ Stride CD, Edwards RV, Seddon JC. Sward destruction by application of glyphosate before cutting or grazing; 1985. pp. 771–778. British Crop Protection Conference – Weeds 7B–6.

³² http://www.exponent.com/files/Attorney/2f28f368-Of2c-48d0-91c2-60589cce38f1/Presentation/ceExpertCVUpload/stride,c_full.pdf

³³ *“Exponent, Inc., a research and scientific consultant firm with clients from industry (including crop protection) and government” Mr. Stride compiles national and zonal dRR format biological assessment dossiers and dRR evaluation dossiers to meet the needs of Regulation 1107/2009 for plant protection products for re-registration at Annex III or new active substances at Annex I. He also provides advice on efficacy and trial programmes; conducts data gap analyses, identifying potential problems and solutions, drafts efficacy protocols to fit EU guidelines and good agronomic practice, and can manage efficacy testing programmes including study monitoring and ensuring reporting standards are high. He also compiles study summaries and tiered dossiers for Biocides in IUCLID5.*

³⁴ http://archive.hgca.com/publications/documents/cropresearch/RR65_Final_Research_Review.pdf

³⁵ <http://www.scribd.com/doc/57155451/FULLREPORT-GLYPHOSAT-04#scribd>

crops will depend on the widespread use of glyphosate.” He was correct. In 2015, 16 years later, the manufacturers are still having their way and it looks as if glyphosate will soon be re-registered thanks to collusion between Industry, German RMS, EFSA and the EU Commissioners.

The public is unaware that glyphosate (and other pesticide) residues are present in food despite the fact that pre-harvest spraying began in 1980

Defra Expert Committee on Pesticide Residues in Food:³⁶ Monsanto is responsible for humans and animals having glyphosate residues in their bodies: it is in all staple, non-organic foods

The results from monitoring of Pesticide Residues in Food (PRiF) have been published quarterly in the UK since 2000, but pre-harvest application to crops had already been authorised 20 years before. Bread and breakfast cereals are staple foods but there are no maximum residue limits (MRLs) for bread or breakfast cereals. Residues in bread are tested twice a year.

e.g. 2002 3rd Quarter: Comments from PRiF: *“Residues of chlormequat,³⁷ glyphosate and pirimiphos-methyl³⁸ 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.”*

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.”*

When the CRD Head of Regulatory Policy replied on 28/02/2014 to defend the authorisation of glyphosate, he told me that the capability to detect individual pesticides in food had increased from 150 in 2003 to 393 in 2012. He stated: *“In the 2012 Report, although there were a large number of residues found in bread, none of these were at a level to suggest a risk to consumer health.”*

However, he failed to reply to my question as to why EFSA was regularly increasing the Maximum Residue Limits (MRLs) of glyphosate in foods at the request of Monsanto to accommodate their practice of desiccation of crops and to protect their imports into Europe.³⁹

The use of glyphosate for desiccation of both barley and wheat was accepted by the brewing and distilling industries in 2007⁴⁰ therefore it is probable that men will have higher glyphosate residues because of the consumption of beer and/or whisky. 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. Glyphosate is used as a ‘ripeners’ on sugar cane and is usually sprayed by air 6 weeks before harvest. The US still does not require labelling of GM. Animals in the UK are fed with imported GM soya and maize.

CRD/PSD Annual Report 2008/2009⁴¹ Is the CRD a safety agency, or a service agency for industry?

Extracts: *“This has been a very busy year in the approvals group. Applications for product approvals were 9% over business estimates with a total of 1,767 applications received and 1,622 applications completed this year, 96% of which were completed within published targets. Importantly 100% of*

³⁶ <http://www.pesticides.gov.uk/guidance/industries/pesticides/advisory-groups/PRiF/about-PRiF>

³⁷ Chlormequat, a plant growth regulator was present consistently throughout.

³⁸ 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.

³⁹ <http://www.efsa.europa.eu/en/efsajournal/pub/2550.htm>

⁴⁰ 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>

⁴¹ http://www.pesticides.gov.uk/Resources/CRD/Migrated-Resources/Documents/A/Annual_report_and_accounts_final.pdf

'fast track' applications identified by industry as high priority to their business needs were completed within published targets. Achieving this demanding target despite the increase in applications has required diligent application and commitment of evaluating staff and their managers and represents a significant achievement. We continue to support growers and we have completed the first stage of the conversion exercise for the 'Long Term Arrangements for Extension of Use' on non-edible crops. Of the 401 uses requested by growers, the 131 products containing active substances that have already been fully reviewed in the EU review programme, and included on Annex I of Council Directive 91/414/EEC have been completed. The remaining product/uses identified by growers will be automatically included in the on-going re-registration process minimising the impact on industry. We also assisted in the evaluation of new products by helping companies work towards the completion of appropriate dossiers through the provision of detailed advice. This advice has covered both chemical pesticides and biopesticides that we continue to support under our biopesticides scheme. We submitted completed evaluation reports for 5 new active substances where the UK was the EU Rapporteur Member State and issued 3 UK provisional authorisations in advance of Annex I inclusion. In addition we completed 8 'partial dossier' submissions.

About 60% of the CRD budget comes from industry. "Our work is funded from three main income streams. Firstly, income from industry is generated through fee-paid work, the pesticides levies and other chargeable events (e.g. training)." Page 9

Detection of glyphosate: One example of this was a project to develop analytical chemistry methods to allow the detection of glyphosate (a widely used herbicide) and other pesticides in cereal crops (project PS2538 on Defra's Science website EC legislation sets a very low level (0.01mg/kg)) for pesticide residues in infant food. This level has been very difficult to achieve particularly for the herbicides, glyphosate, which is widely used as a desiccant [sic] on cereal crops. However, the Food and Environment Research Agency (Fera) has now developed a method which will allow the routine analysis of glyphosate in cereal based infant foods down to 0.01 mg/kg within the Pesticide Residues Committee (PRC) monitoring programme. This is a significant step forward. Page 10

Comment: Thongprakaisang S, et al.⁴² Glyphosate induces human breast cancer cells growth via estrogen receptors. *Food Chem Toxicol.* 2013, 59C: 129-136.

The study found that breast cancer cell proliferation is accelerated by glyphosate in extremely low concentrations. "The present study used pure glyphosate substance at log intervals from 10^{-12} to 10^{-6} M. These concentrations are in a crucial range which correlated to the potential biological levels at part per trillion (ppt) to part per billion (ppb) which have been reported in epidemiological studies."

Disinformation from Science Media Centre and Glyphosate Task Force

Why is the London Science Media Centre hosted by the Wellcome Trust and sponsored by industry, but not by NGOs or Unions?

Colin Macilwain, a science policy writer from Edinburgh who has worked as a reporter and an editor from both sides of the Atlantic⁴³ wrote about plans to replicate Britain's Science Media Centre (SMC) in the United States, which he said was "fraught with danger."

Extracts: "The London SMC was set up because UK scientific leaders were upset that environmentalists had successfully fought the introduction of genetically modified food; they felt that the UK media were too susceptible to environmental scare stories about new technologies.

Despite the fears of the SMC founders, the British press — led by the BBC, which treats the Confederation of British Industry with the deference the Vatican gets in Rome — is overwhelmingly conservative and pro-business in its outlook. It is quite unperturbed by the fact that SMC sponsors

⁴² <http://www.ncbi.nlm.nih.gov/pubmed/23756170>

⁴³ <http://magz.elibraries.eu/ul/1826/Nature%20Magazine%207389%20-%202012-03-15.pdf>
go.nature.com/klnuna World View Nature 15th March 2012

include AstraZeneca, BP, Coca-Cola, L'Oreal, Monsanto, Syngenta (as well as Nature Publishing Group) but not a single environmental non-governmental organization (NGO) or trade union. Fiona Fox, the SMC's director, says that the centre operates independently of its sponsors and points out that none (except its host, the Wellcome Trust) accounts individually for more than 5% of its income. She adds that no NGOs are involved because it was their public-relations skills that the founders of the SMC sought to match."

Macilwain goes on to say: "But the perception that the environmental group Friends of the Earth constitutes a bigger threat to scientific truth-telling than some of the corporate names on the SMC's sponsorship list is not one the US media would accept.

Some of those considering a US centre share these concerns. They think that their funding model will have to rely on charitable trusts, not companies or government agencies."

Glyphosate Facts: Transparency on safety aspects and use of glyphosate containing herbicides in Europe⁴⁴

This website and the website of the European Glyphosate Task Force (GTF) are interlinked.

Glyphosate Facts provides service and advice for farmers.

There is a 12-page paper on the Clarification of Pre-harvest uses of glyphosate: The advantages, best practices and residue monitoring⁴⁵

"Many residue trials have been carried out over many years with pre-harvest uses. The residue data from these trials are used as the basis for the setting maximum residue levels (MRLs) for crops like cereals, pulses and oil seed crops where pre-harvest treatments are recommended." Many studies of residues in the 2002 reassessment of glyphosate are unpublished.⁴⁶

The third reference is: How valuable is glyphosate to UK agriculture and the environment?⁴⁷

It was not possible to discover the provenance of this paper without purchasing a copy from the publishers. However, it was worth the expense. The authors came from ADAS, (now a private company) the branch of MAFF that was the first to recommend pre-harvest application of glyphosate, from a paper written by O'Keeffe, a Monsanto Scientist. "Sarah K. Cook, Sarah C. Wynn and James H. Clarke, ADAS UK Ltd, consider the contribution glyphosate makes to cost-effective agriculture and biodiversity in the UK." James Clarke is Science and Business Development Manager for ADAS soils, crops and water. He was an Independent Member of the Advisory Committee on Pesticides (ACP) as an expert in efficacy and farming systems, from 2003-2007. He was Chairman of the UK Pesticides Forum.

Pesticides Forum Annual Report 2011 Executive Summary⁴⁸

Pesticides Forum Executive Summary in 2011 states that: "the use of pesticides is not adversely impacting on the health of UK citizens or the environment. This is testimony to the effectiveness of both statutory and voluntary controls."

Extracts: "The Pesticide Usage Survey figures are considered by Monsanto to be an underestimate of the usage of glyphosate in the UK, particularly concerning the amount of glyphosate applied to pre-planting to crops (P280)... but Monsanto believes that the agricultural use each year is approximately double this in the UK." Table 2 Estimated losses to industry due to loss of glyphosate (£M) P281

⁴⁴ <http://www.glyphosate.eu/>

⁴⁵ http://www.glyphosate.eu/system/files/sidebar-files/clarification_of_pre-harvest_uses_of_glyphosate_en_0.pdf

⁴⁶ http://ec.europa.eu/food/plant/protection/evaluation/existactive/list1_glyphosate_en.pdf

⁴⁷ <http://www.ingentaconnect.com/content/resinf/opm/2010/00000021/00000006/art00008>

⁴⁸ <http://www.pesticides.gov.uk/Resources/CRD/Migrated-Resources/Documents/P/Pesticides-Forum-AR-2011-revSep12.pdf>

The authors discuss glyphosate under the following headings: *Importance and extent of glyphosate use in the UK; Calculating the cost of losing glyphosate; Impact on farmer income; Impact on food cost; Environmental impacts* (including increase in greenhouse gas emissions of 25%); *Socio-economic impacts* (The use of glyphosate has a monetary impact upon the farmer, but also on the farmer's quality of life).

Conclusion: *In conclusion, the loss of glyphosate would cause very severe impacts on UK agriculture and the environment. To ensure it remains available for use in future will need to involve all relevant stakeholders (farmers, agronomists and policy makers). Farmers and agronomists need to ensure that they implement best practices to minimise the risks of glyphosate entering water in order to maximise the benefits that can be gained from this herbicide. There needs to be interaction with policy makers to find appropriate solutions as necessary.*

The Value of Crop Protection by Séan Rickard: Commissioned by the Crop Protection Association

The ADAS paper was published in December 2010, the same month as Prof Séan Rickard's Report to defend pesticides from an EU ban. Each document gave apocalyptic warnings to the EU, to UK farmers and to the public.

'Séan Rickard, a well-known economist from Cranfield University, wrote the present Government's Agricultural manifesto and is currently an Academic Adviser to the government.' His second report, *The Value of Crop Protection*⁴⁹ (commissioned by the Crop Protection Association and first appeared on its website on 7th December 2010), examines the economic benefits of Plant Protection Products PPPs (i.e. pesticides) to the food supply. Prof Rickard warned that if the EU banned pesticides, food costs could soar up to 40% in the UK and could add £70 billion to the country's food bill.

Most of the early reports of pre-harvest use of glyphosate came from Monsanto scientists (O'Keeffe, Stride, Czepo) although this was not obvious from the publications

"Many residue trials have been carried out over many years with pre-harvest uses."

In Chapter 6 of Monsanto's document, *Agronomic Benefits of Glyphosate in Europe*,⁵⁰ Pre-harvest weed control in arable crops and grassland there are three references in Hungarian from the Registration Manager for Monsanto (M. Czepo), two papers from scientists working for Monsanto (O'Keeffe & Stride) and undisclosed documents from Monsanto (perhaps they were commercially sensitive?). In Czepo's PhD Thesis,⁵¹ he had many 'plugs' for GM crops and glyphosate, without it being made clear that he worked for Monsanto.

The European Glyphosate Task Force⁵² monitors articles and supplies data for re-assessment

The European Glyphosate Task Force (GTF) is described as *"a consortium of companies joining resources and efforts in order to renew the European glyphosate registration with a joint submission."* Their other role appears to be to dismiss out of hand all the articles which have *'unsubstantiated allegations about glyphosate'*.⁵³

- For example, in combination with Monsanto⁵⁴ the GTF successfully put pressure on the Sri Lankan Government to stop restrictions on use of glyphosate in tea planting areas where nephrotoxic metals were present and where workers were suffering from Chronic Kidney Disease of unknown aetiology (CKDu).⁵⁵ The Glyphosate Task Force declared that:

⁴⁹ http://www.cropprotection.org.uk/media/1903/cpa_the_value_of_crop_protection_rickard_report.pdf

⁵⁰ <http://www.monsanto.com/products/Documents/glyphosate-background-materials/Agronomic%20benefits%20of%20glyphosate%20in%20Europe.pdf>

⁵¹ http://193.6.34.234/doktori/2004/Czepo_Mihaly_theses_en.pdf

⁵² <http://www.glyphosetaskforce.org/>

⁵³ <http://www.glyphosate.eu/gtf-statements/gtf-responds-unsubstantiated-allegations-about-glyphosate>

⁵⁴ <http://www.glyphosate.eu/gtf-statements/restrictions-glyphosate-sri-lanka-not-supported-scientific-evidence>

⁵⁵ <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3945589/>

“Glyphosate is used extensively in many countries where comparable rates of CKDu are not evident.” On the contrary, there are many reports of CKDu in agricultural workers all over the world⁵⁶ where glyphosate is used, particularly those that harvest tea and in sugar cane workers (when glyphosate is used for ripening and sprayed by air 6 weeks before harvest) .

- The GTF also dismissed an article in *The Ecologist*⁵⁷ (Glyphosate: A converging pattern of toxicity from farm to clinic to laboratory) which they describe as *“sensationalist and that no credible studies or new data exist to support the claims made by the author... For over forty years, regulators and public authorities around the world have conducted extensive risk assessments - all of which have concluded that glyphosate does not pose any unacceptable risk to the environment or human health.”*⁵⁸
- The GTF dismissed the article⁵⁹ about Glyphosate in the urine of Dairy Cows in Denmark as *“no reason to believe that the results are of any scientific merit, as the authors fail to report any meaningful or relevant data.”* The GTF said: *“All credible scientific studies carried out to date on this issue have concluded that glyphosate is excreted in animals and humans as unmetabolised parent molecule. There has not been any indication of Glyphosate inducing kidney damage. Furthermore, it is important to point out that glyphosate and the primary environmental metabolite, AMPA, have not been reported in the milk of dairy cattle... The German risk assessment authority, BfR, has published a first assessment of the study on its website: “In a first assessment of the study the Federal Institute for Risk Assessment (BfR) concludes that the reported results do not prove a causal link between glyphosate exposure of the animals and their observed changes of enzyme activities and other laboratory parameters.”*⁶⁰
- The response of the GTF⁶¹ to the 2-year feeding study by Prof Séralini *“A study conducted by a French university team led by Gilles-Eric Séralini was presented during a press conference in September 2012. The scientists claimed to have found negative health effects including tumor development and a shortened life time in laboratory rats fed a diet containing a glyphosate containing herbicide and genetically modified NK603 maize. Numerous scientists have examined the study and expressed their doubts and criticism on its validity. Their published comments may be viewed under the links provided below.”*⁶² (The links are to the Science Media Centre which publishes advice for journalists and provides an almost identical service to industry as the Glyphosate Task Force!) *In summary, many scientists hold the opinion that this study does not meet minimum acceptable standards for this type of scientific research, the findings are not supported by the data presented, and the conclusions are not relevant for the purpose of safety assessment.”*

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 months⁶³

“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

⁵⁶ <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3945755/> Page 14, item 14.

⁵⁷

http://www.theecologist.org/News/news_analysis/2769439/roundup_a_converging_pattern_of_toxicity_from_farm_to_clinic_to_laboratory.html

⁵⁸ <http://www.glyphosate.eu/gtf-statements/gtf-responds-unsubstantiated-allegations-about-glyphosate>

⁵⁹ <http://www.glyphosate.eu/glyphosate-urine-danish-dairy-cows-statement-glyphosate-task-force-0>

⁶⁰ <http://dx.doi.org/10.4172/2161-0525.1000186>

⁶¹ <http://www.glyphosate.eu/response-glyphosate-task-force-study-professor-seralini>

⁶² <http://www.sciencemediacentre.org/expert-reaction-to-gm-maize-causing-tumours-in-rats/>

⁶³ <http://dx.doi.org/10.1016/j.fct.2012.08.005>

hormone and sex dependent, and the pathological profiles were comparable. Females 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 tumors (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.”

Authors’ highlights:

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

A year later, the Editor of *Food and Chemical Toxicology* retracted the paper after a Monsanto Scientist, Richard Goodman, had been appointed to the Journal.

What the global scientific community said about the retraction of Séralini’s paper:

Claire Robinson on behalf of GMWatch said: *Journal retraction of Séralini study is illicit, unscientific, and unethical.*⁶⁴ *It violates the guidelines for retractions in scientific publishing set out by the Committee on Publication Ethics (COPE), of which FCT is a member.*

COPE guidelines state that the only grounds for a journal to retract a paper are:

- *Clear evidence that the findings are unreliable due to misconduct (e.g. data fabrication) or honest error*
- *Plagiarism or redundant publication*
- *Unethical research*

*Prof Séralini’s paper does not meet any of these criteria and Hayes admits as much. In his letter informing Prof Séralini of his decision*⁶⁵ *Hayes concedes that an examination of Prof Séralini’s raw data showed “no evidence of fraud or intentional misrepresentation of the data” and nothing “incorrect” about the data.*

Hayes states that the retraction is solely based on the “inconclusive” nature of the findings on tumours and mortality, given the relatively low number of rats used and the choice of rat strain, which Hayes says naturally has a “high incidence of tumours”.

“Crucially, however, inconclusiveness of findings is not a valid ground for retraction. Numerous published scientific papers contain inconclusive findings, which are often mixed in with findings that can be presented with more certainty. It is for future researchers to build on the findings and refine scientific understanding of any uncertainties”.

⁶⁴ <http://www.gmwatch.org/index.php/news/archive/2013/15184>

⁶⁵ <http://www.prnewswire.co.uk/news-releases/elsevier-announces-article-retraction-from-journal-food-and-chemical-toxicology-233754961.html>

Euronews⁶⁶ A new editor at the journal, Richard Goodman, is a biologist who formerly worked for Monsanto – the leading producer of GM foods. French MEP Corinne Lepage said: *“If this magazine, which just hired a former Monsanto employee as an editor, withdraws this study, it’ll mean it never existed. What we have tried to do, to try and carry out studies of the long-term effects of genetically-modified foods and pesticides on human health, will be permanently shut off.”* * In 2015 Richard Goodman no longer seems to be an editor.

European Network of Scientists for Social and Environmental Responsibility ENSSER⁶⁷

“In short, the decision to retract Séralini's paper is a flagrant abuse of science and a blow to its credibility and independence. It is damaging for the reputation of both the journal Food and Chemical Toxicology and its publisher Elsevier. It will decrease public trust in science. And it will not succeed in eliminating critical independent science from public view and scrutiny. Such days and times are definitively over. Prof. Séralini's findings stand today more than before, as even this secret review found that there is nothing wrong with the technicalities, conduct or transparency of the data – the foundations on which independent science rests. The conclusiveness of their data will be decided by future independent science, not by a secret circle of people.”

Republication of the Séralini study in a new journal: Science speaks for itself

Press release: GMOSeralini.org, 24 June 2014. Séralini and colleagues republished their 2 year study of GMO maize and Roundup® in rats in *Environmental Science Europe* by the Springer Group,⁶⁸ together with its raw data. The team described the attacks they received in 2012 when it was first published in *Journal of Food & Chemical Toxicology*, from those with conflicting interests,⁶⁹ including the Science Media Centre. Reported around the world, it received minimal publicity in the UK.

The WHO/IARC Report classifying glyphosate as a probable carcinogen (2A)

This is what the GTF⁷⁰ had to say about the WHO recent classification of glyphosate as a carcinogen. *“Evaluations carried out by regulatory authorities across the world for over forty years have all confirmed that glyphosate poses no unacceptable risk to humans, animals or the environment. The Glyphosate Task Force (GTF) therefore does not accept the recent classification of glyphosate by the International Agency for Research on Cancer (IARC) as a Group 2A carcinogen. The evaluation which has produced this outcome demonstrates serious deficiencies in terms of methodological approach and the overall conclusion is inconsistent with the results of all regulatory reviews”*

What they fail to mention is that industry has been self-regulating glyphosate for 40 years.

Expert Reaction to the Science Media Centre downplays the significance of the IARC Statement⁷¹

No-one has mentioned that glyphosate reassessment is almost completed. Are they aware?

Prof Andreas Kortenkamp, Professor in Human Toxicology at Brunel University London, said:

The authorities in the EU must now consider whether existing measures are sufficient to protect consumers and pesticide applicators from cancer risks.

Dr Oliver Jones, Senior Lecturer in Analytical Chemistry at RMIT University in Melbourne:

This sounds scary and IARC evaluations are usually very good, but to me the evidence cited here appears a bit thin.

⁶⁶ <http://www.euronews.com/2013/11/28/french-researcher-claims-gm-food-lobbyists-pulled-study-from-journal/>

⁶⁷ <http://www.ensser.org/democratising-science-decision-making/ensser-comments-on-the-retraction-of-the-seralini-et-al-2012-study/>

⁶⁸ <http://www.enveurope.com/content/26/1/14>

⁶⁹ <http://www.gmoseralini.org/republication-seralini-study-science-speaks/>

⁷⁰ <http://www.glyphosate.eu/gtf-statements/statement-gtf-recent-iarc-decision-concerning-glyphosate>

⁷¹ <http://www.sciencemediacentre.org/expert-reaction-to-carcinogenicity-classification-of-five-pesticides-by-the-international-agency-for-research-on-cancer-iarc/>

Prof Alan Boobis, Professor of Biochemical Pharmacology at Imperial College London, said:

In my view this report is not a cause for undue alarm. Prof Alan Boobis is Vice-President of the Board of Directors of the International Life Sciences Institute (ILSI) Europe, Vice Chairman of the Scientific Advisory Committee of ILSI Europe and a Member of the Board of Trustees. The membership of ILSI Europe consists of 56 (as of 12 Feb 2015) organisations.⁷² This list represents Global Corporations (including the six Agrochemical Giants) with massive resources that are seeking to control the world's food supply. ILSI is an industry organisation based in Washington, DC, USA. Under Declared Interests Prof Boobis states: *"I have no consultancies or grants from pesticide companies."* This might be technically true, but his position on the ILSI Scientific Advisory Committee with many scientists from corporations must represent conflicts! He was on the Editorial Board of the *Journal of Food and Chemical Toxicology* (now Emeritus Editor). In fact he was the first to give expert reaction to the Science Media Centre calling for withdrawal of Séralini's paper on the effects of GM Maize on rats.⁷³ *"However, there are instances where the conclusions of a paper significantly over-interpret the findings, as was the case here."*

Prof Sir Colin Berry, Emeritus Professor of Pathology at Queen Mary University of London, said:

The weight of evidence is against carcinogenicity.

Prof David Coggon, Professor of Occupational and Environmental Medicine at the University of Southampton, and Chairman of the UK Committee on Toxicity of Chemicals in Food, Consumer Products and the Environment (CoT) said: *The IARC report does not raise immediate alarms.*

However, I would expect regulatory authorities around the world to take note of this new evaluation, and to consider whether it indicates a need to review their risk assessments for any of the pesticides that they currently approve. Prof Coggon is Chairman of one of these Regulatory Committees.

Prof Tony Dayan, Emeritus Toxicologist, said:

Detailed analysis of the nature and quality of the evidence overall does not support such a high level classification, which at the most should be Class IIB."

The Scandal of Glyphosate Re-assessment in Europe

Glyphosate re-assessment in Europe has been described as 'fraudulent' and 'inadequate'

There are two independent organisations that have raised serious questions about the German Rapporteur Member State's re-assessment of glyphosate.

- The Institute of Science in Society (I-SIS) Report 07/09/2014

Scandal of Glyphosate Re-assessment in Europe⁷⁴

EU rapporteur state Germany recommends re-approval with daily intake increased by 67 %; its re-assessment was carried out by Monsanto and a consortium of chemical companies in Europe based almost entirely on studies from industry; it should be rejected outright.

*"But BfR and its federal agency partners did not actually review the published toxicology studies. Instead they relied on a summary provided to them by the **Glyphosate Task Force (GTF)**"*

- Testbiotech highlights renewed concern over the risk assessment of glyphosate Report by German authorities on the most commonly used herbicide criticised as inadequate Friday, 10. October 2014

In a report published today, Testbiotech is highlighting the ongoing inadequacies in the risk assessment of the herbicide, glyphosate.⁷⁵ The weed killer is sold under brand names such as Roundup. At the beginning of this year, German authorities published a Renewal Assessment

⁷² <http://www.ilsa.org/Europe/Pages/currentmembers.aspx>

⁷³ <http://www.sciencemediacentre.org/expert-reaction-to-reports-of-a-request-for-gilles-eric-seralini-to-withdraw-his-paper-on-the-effects-of-gm-maize-on-rats/>

⁷⁴ http://www.i-sis.org.uk/Scandal_of_Glyphosate_Reassessment_in_Europe.php

⁷⁵ http://www.testbiotech.org/sites/default/files/Testbiotech_doubts_safety_Glyphosat.pdf

Report (RAR) as part of an EU re-evaluation process for the most widely used weed killer. According to the German authorities, there were no risks to health, and it was even suggested that the acceptable daily thresholds for long term exposure (ADI) to which consumers could be exposed might be raised.

In contrast to these findings, the Testbiotech analysis shows that the German assessment report is untenable in light of new scientific evidence and cites evidence from studies published in 2013 and 2014. Testbiotech concluded that risks associated with glyphosate must be examined much more closely than has been the case so far.

EFSA's Reasoned Opinion Panel increases MRLs at the request of industry (Monsanto)

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/kg⁷⁶ (i.e. 100 times: January 2012). EFSA had granted similarly elevated MRLs for glyphosate on wheat and GM soya.

Monsanto convicted of fraud with regard to false advertising in 1996

In 1996, the Attorney General of the State of New York, Consumer Frauds and Protection Bureau, Environmental Protection Bureau successfully brought a case against Monsanto with regard to: False advertising by Monsanto regarding the safety of Roundup® herbicide (glyphosate).⁷⁷

Monsanto's document: The agronomic benefits of glyphosate in Europe [2010]⁷⁸

Despite having been convicted of false claims in 1996, Monsanto repeated the same lies in a document published 2010 entitled "The agronomic benefits of glyphosate in Europe" [28, p.3]: the same year as glyphosate was granted the patent as an antibiotic.⁷⁹ "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.*" Further, it states that glyphosate has an "*excellent safety profile to operators, the public and the environment*" (italics added). The document outlined at least 16 use areas (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).

On page 4, Monsanto makes another fraudulent claim about the use of glyphosate to increase wildlife and biodiversity: "Increased wildlife and biodiversity: Use of glyphosate instead of mechanical weed control techniques on non-cropped/amenity land preserves wildlife like small mammals and birds. Adoption of Conservation agriculture encourages earthworms and other invertebrates as well as birds. Judicious use of glyphosate to control excessive plant growth and invasive weeds on or around waterways and lakes encourages wildfowl and much other wildlife."

An additional claim was made for GM Crops (p. 4): "*Use of glyphosate tolerant crops allows later control of weeds providing early food sources for many invertebrates and birds and thus increases animal numbers.*" This is another lie, as witnessed by Craig Childs' description below from the US.

Farms in the US where Monsanto's Roundup® Ready crops are grown are biological deserts

⁷⁶ <http://www.efsa.europa.eu/en/efsajournal/pub/2550.htm>

⁷⁷ <http://www.mindfully.org/Pesticide/Monsanto-v-AGNYnov96.htm>

⁷⁸ <http://www.monsanto.com/products/Documents/glyphosate-background-materials/Agronomic%20benefits%20of%20glyphosate%20in%20Europe.pdf>

⁷⁹ <http://www.google.com/patents/US7771736>

Craig Childs, author of *Apocalyptic Planet*, describes searching for signs of life in 2012 on a farm in Grundy County, Iowa, which was growing Monsanto's GM Bt Roundup® Ready corn: "I had come to a different type of planetary evolution. I listened and heard nothing, no bird, no click of an insect."⁸⁰ American journalist Robert Krulwich reviewed *Apocalyptic Planet*: "Yet, 100 years ago, these same fields, these prairies, were home to 300 species of plants, 60 mammals, 300 birds, hundreds and hundreds of insects. This soil was the richest, the loamiest in the state. And now, in these patches, there is almost literally nothing but one kind of living thing. We've erased everything else. There's something strange about a farm that intentionally creates a biological desert to produce food for one species: us. It's efficient, yes. But it's so efficient that the ants are missing, the bees are missing, and even the birds stay away. Something's not right here. Our cornfields are too quiet."⁸¹

Britain joins forces with Monsanto

On 23/09/2013 the British Government⁸² 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®.

GM crops to be fast-tracked in UK following EU vote⁸³

However, the UK and Monsanto won't need legal action. In January 2015 they persuaded the European Commission to allow countries free votes on GM crops, without any idea about herbicide/glyphosate residues in our/their food.

Other independent studies on the toxicity of formulated glyphosate and proof of significant deterioration of health in the UK and the US

Roundup® and AMPA residues in GM Soya: GM Soya is not 'substantially equivalent'

Prof Thomas Bøhn's paper from Norway which found that GM soya is not 'substantially equivalent' to non-GM has been ignored.⁸⁴ This paper describes the nutrient and elemental composition, including residues of herbicides and pesticides, of 31 soy bean batches from Iowa, USA.

In a commentary on the paper Bøhn wrote: "Extreme Levels" of Roundup® in Food Became the Industry Norm.⁸⁵ "*Roundup® Ready GM-soy accumulates residues of glyphosate and aminomethylphosphonic acid (AMPA) and GM soy also differs markedly in nutritional composition compared with soybeans from other agricultural practices. Organic soybean samples also showed a more healthy nutritional profile (e.g. higher in protein and lower in saturated fatty acids) than both industrial conventional and GM soybeans. Lack of data on pesticide residues in major crop plants is a serious gap of knowledge with potential consequences for human and animal health. How is the public to trust a risk assessment system that has overlooked the most obvious risk factor for herbicide tolerant GM crops, i.e. high residue levels of herbicides, for nearly 20 years? If it has been due to lack of understanding, it would be bad. If it is the result of the producer's power to influence the risk assessment system, it would be worse.*"

⁸⁰ Craig Childs: *Apocalyptic Planet*: Chapter 6 Species Vanish. "How shall the heart be reconciled to its feast of losses?" Stanley Kunitz, American Poet 1905-2006.

<http://www.houseofrain.com/bookdetail.cfm?id=1344621970977>

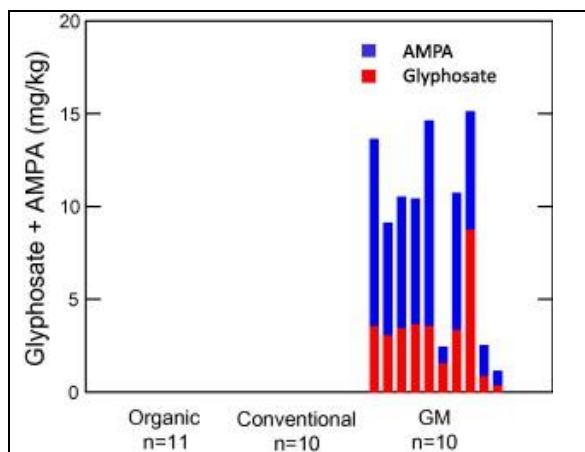
⁸¹ Robert Krulwich commenting on Craig Childs' weekend in a field growing Monsanto's Roundup Ready Corn. <http://www.npr.org/blogs/krulwich/2012/11/29/166156242/cornstalks-everywhere-but-nothing-else-not-even-a-bee>

⁸² <http://www.testbiotech.de/en/node/898>

⁸³ <http://www.euractiv.com/sections/agriculture-food/gm-crops-be-fast-tracked-uk-following-eu-vote-311313>

⁸⁴ <http://www.sciencedirect.com/science/article/pii/S0308814613019201> Compositional differences in soybeans on the market: glyphosate accumulates in Roundup Ready GM soybeans.

⁸⁵ <http://www.independentsciencenews.org/news/how-extreme-levels-of-roundup-in-food-became-the-industry-norm/>



From: Compositional differences in soybeans (Organic, Conventional and GM.) from Iowa, USA. Reproduced by kind permission of Prof Thomas Bøhn, Genøk, Centre for Biosafety, Norway.

In Europe in 2014: The first study to measure glyphosate residues in Danish dairy cattle and its impact on blood parameters. Field Investigations of Glyphosate in Urine of Danish Dairy Cows⁸⁶

Abstract: In the present study, thirty dairy cows from each of eight Danish dairy farms were investigated for excretion of glyphosate in urine. Blood serum parameters indicative of cytotoxicity as alkaline phosphatase (AP), glutamate dehydrogenase (GLDH), glutamate oxaloacetate transaminase (GOT), creatinine kinase (CK), nephrotoxicity, (urea, creatine), cholesterol and the trace elements as manganese (Mn), cobalt (Co), selenium (Se), copper (Cu) and zinc (Zn) were investigated. All cows excreted glyphosate in their urine but in varying concentrations. Increased levels of GLDH, GOT and CK in cows from all farms demonstrate a possible effect of glyphosate on liver and muscle cells. High urea levels in some farms could be due to nephrotoxicity of glyphosate. Also the unexpected very low levels of Mn and Co were observed in all animals which could be explained due to a strong mineral chelating effect of glyphosate. In contrast the mean levels of Cu, Zn and Se were within the normal reference range. In conclusion, this study gives the first documentation to which extent Danish dairy cattle are exposed to Glyphosate and its impact on blood parameters.

Detection of Glyphosate in Malformed Piglets⁸⁷

Abstract: Glyphosate residues in different organs and tissues as lungs, liver, kidney, brain, gut wall and heart of malformed euthanized one-day-old Danish piglets (N= 38) were tested using ELISA. All organs or tissues had glyphosate in different concentrations. The highest concentrations were seen in the lungs (Range 0.4-80 µg/ml) and hearts (Range 0.15-80 µg/ml). The lowest concentrations were detected in muscles (4.4- 6.4 µg/g). The detection of such glyphosate concentrations in these malformed piglets could be an allusion to the cause of these congenital anomalies. Further investigations are urgently needed to prove or exclude the role of glyphosate in malformations in piglets and other animals.

The authors gave an overview of reports of malformations in children of families living a few meters from where this herbicide was sprayed. The risk of malformation in human embryos is very high when their mothers are contaminated at 2 to 8 weeks of pregnancy.

How glyphosate damages human metabolism by suppressing metabolic pathways

Samsel A and Seneff S (2013) Glyphosate's suppression of Cytochrome P450 enzymes and amino acid biosynthesis by the gut microbiome: Pathways to Modern Diseases.⁸⁸

⁸⁶ <http://dx.doi.org/10.4172/2161-0525.1000186>

⁸⁷ <http://omicsonline.org/open-access/detection-of-glyphosate-in-malformed-piglets-2161-0525.1000230.pdf>

⁸⁸ <http://www.mdpi.com/1099-4300/15/4/1416>

Abstract: Glyphosate, the active ingredient in Roundup[®], is the most popular herbicide used worldwide. The industry asserts it is minimally toxic to humans, but here we argue otherwise. Residues are found in the main foods of the Western diet, comprised primarily of sugar, corn, soy and wheat. Glyphosate's inhibition of cytochrome P450 (CYP) enzymes is an overlooked component of its toxicity to mammals. CYP enzymes play crucial roles in biology, one of which is to detoxify xenobiotics. Thus, glyphosate enhances the damaging effects of other food borne chemical residues and environmental toxins. Negative impact on the body is insidious and manifests slowly over time as inflammation damages cellular systems throughout the body. Here, we show how interference with CYP enzymes acts synergistically with disruption of the biosynthesis of aromatic amino acids by gut bacteria, as well as impairment in serum sulfate transport. Consequences are most of the diseases and conditions associated with a Western diet, which include gastrointestinal disorders, obesity, diabetes, heart disease, depression, autism, infertility, cancer and Alzheimer's disease. We explain the documented effects of glyphosate and its ability to induce disease, and we show that glyphosate is the "textbook example" of exogenous semiotic entropy: the disruption of homeostasis by environmental toxins.

Glyphosate, pathways to modern diseases II: Celiac sprue and gluten intolerance.⁸⁹

Samsel A and Seneff S . [Glyphosate, pathways to modern diseases II: Celiac sprue and gluten intolerance](#)

Abstract *Celiac disease, and, more generally, gluten intolerance, is a growing problem worldwide, but especially in North America and Europe, where an estimated 5% of the population now suffers from it. Symptoms include nausea, diarrhea, skin rashes, macrocytic anemia and depression. It is a multifactorial disease associated with numerous nutritional deficiencies as well as reproductive issues and increased risk to thyroid disease, kidney failure and cancer. Here, we propose that glyphosate, the active ingredient in the herbicide, Roundup[®], is the most important causal factor in this epidemic. Fish exposed to glyphosate develop digestive problems that are reminiscent of celiac disease. Celiac disease is associated with imbalances in gut bacteria that can be fully explained by the known effects of glyphosate on gut bacteria. Characteristics of celiac disease point to impairment in many cytochrome P450 enzymes, which are involved with detoxifying environmental toxins, activating vitamin D3, catabolizing vitamin A, and maintaining bile acid production and sulfate supplies to the gut. Glyphosate is known to inhibit cytochrome P450 enzymes. Deficiencies in iron, cobalt, molybdenum, copper and other rare metals associated with celiac disease can be attributed to glyphosate's strong ability to chelate these elements. Deficiencies in tryptophan, tyrosine, methionine and selenomethionine associated with celiac disease match glyphosate's known depletion of these amino acids. Celiac disease patients have an increased risk to non-Hodgkin's lymphoma, which has also been implicated in glyphosate exposure. Reproductive issues associated with celiac disease, such as infertility, miscarriages, and birth defects, can also be explained by glyphosate. Glyphosate residues in wheat and other crops are likely increasing recently due to the growing practice of crop desiccation just prior to the harvest. We argue that the practice of "ripening" sugar cane with glyphosate may explain the recent surge in kidney failure among agricultural workers in Central America. We conclude with a plea to governments to reconsider policies regarding the safety of glyphosate residues in foods.*

Glyphosate, pathways to modern diseases III: Manganese, neurological diseases, and associated pathologies⁹⁰

Samsel A, Seneff S. [Glyphosate, pathways to modern diseases III: Manganese, neurological diseases, and associated pathologies](#). Surg Neurol Int 2015;6:45.

Abstract *Manganese (Mn) is an often overlooked but important nutrient, required in small amounts for multiple essential functions in the body. A recent study on cows fed genetically modified*

⁸⁹ <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3945755/>

⁹⁰ http://www.surgicalneurologyint.com/temp/SurgNeuroInt6145-4381109_121011.pdf

Roundup®-Ready feed revealed a severe depletion of serum Mn. Glyphosate, the active ingredient in Roundup®, has also been shown to severely deplete Mn levels in plants. Here, we investigate the impact of Mn on physiology, and its association with gut dysbiosis as well as neuropathologies such as autism, Alzheimer's disease (AD), depression, anxiety syndrome, Parkinson's disease (PD), and prion diseases. Glutamate overexpression in the brain in association with autism, AD, and other neurological diseases can be explained by Mn deficiency. Mn superoxide dismutase protects mitochondria from oxidative damage, and mitochondrial dysfunction is a key feature of autism and Alzheimer's. Chondroitin sulfate synthesis depends on Mn, and its deficiency leads to osteoporosis and osteomalacia. Lactobacillus, depleted in autism, depend critically on Mn for antioxidant protection. Lactobacillus probiotics can treat anxiety, which is a comorbidity of autism and chronic fatigue syndrome. Reduced gut Lactobacillus leads to overgrowth of the pathogen, Salmonella, which is resistant to glyphosate toxicity, and Mn plays a role here as well. Sperm motility depends on Mn, and this may partially explain increased rates of infertility and birth defects. We further reason that, under conditions of adequate Mn in the diet, glyphosate, through its disruption of bile acid homeostasis, ironically promotes toxic accumulation of Mn in the brainstem, leading to conditions such as PD and prion diseases.

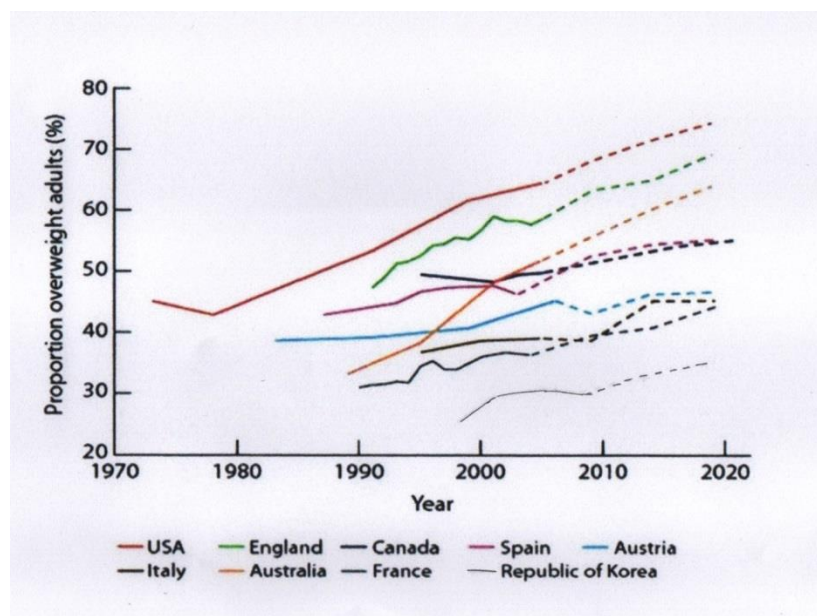
Overweight and obesity in mid-life: Evidence from the 1970 British Cohort Study⁹¹

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.

Obesity levels in England are second only to the US and are running a parallel course to the US



Historical and projected overweight rates in OECD countries⁹²

⁹¹ [Overweight and obesity in mid-life: Evidence from the 1970 British Cohort Study at age 42](#)

⁹² Healthy Choices OECD Health Ministerial Meeting, Paris, 7-8 October 2010
<http://www.oecd.org/health/ministerial/46098333.pdf>

Some of the UK population has been exposed to glyphosate residues in foods since 1980, even without growing GM Glyphosate-Tolerant crops. The US has had GM crops since 1996. The third area with the most overweight adults is Australia, where obesity levels started to rise steeply in 1990 and by 2000 have overtaken Spain and Canada, both of which have GMs. There are 553 glyphosate products registered in Australia. Glyphosate use on GM crops is accelerating. GM canola was registered in 2003, but bans in NSW and Victoria were lifted in 2008.⁹³ Canola has been registered to be desiccated since October 2014⁹⁴ and sunflowers since 2012.⁹⁵ However, the Commonwealth Scientific and Industrial Research Organisation (CSIRO) is promoted as Australia's pre-eminent public scientific research body. *"Although ostensibly publicly funded, CSIRO has, in reality, been encouraged to get 30% of its funding from business, with the CSIRO top management encouraging its staff to go to 40%."* According to John Stocker, CSIRO's former Chief Executive: *"Working with the transnationals makes a lot of sense, in the context of market access. There are very few Australian companies that have developed market access in the United States, in Europe and in Japan, the world's major marketplaces. Yes, we do find that it is often the best strategy to get into bed with these companies."*⁹⁶

Is glyphosate contributing to the 50% decline in coral (1985-2012) on the Great Barrier Reef?

De'ath, G. *et al.* analysed surveys of the coral in the GBF over 27 years:⁹⁷ *"Based on the world's most extensive time series data on reef condition (2,258 surveys of 214 reefs over 1985–2012), we show a major decline in coral cover from 28.0% to 13.8% (0.53%y⁻¹), a loss of 50.7% of initial coral cover."* Mercurio *et al.* in a paper: Glyphosate persistence in seawater⁹⁸ *quantified the biodegradation of glyphosate using standard "simulation" flask tests with native bacterial populations and coastal seawater from the Great Barrier Reef. "Glyphosate has not often been included in regular monitoring programs as the stand-alone analytical methods are often cost-prohibitive, resulting in a long term deficiency in global datasets." ... Highlights: "This is the first study of glyphosate persistence in seawater... Half-lives in "simulation" flask tests ranged from 47 to 315 days... Glyphosate degraded most rapidly under low light and most slowly in the dark... AMPA, the biodegradation metabolite of glyphosate was detected in each treatment... This persistence increases the potential for transport into the marine environment."*

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"*.⁹⁹

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."*

⁹³ <http://www.sbs.com.au/news/article/2012/11/15/factbox-gm-foods-australia>

⁹⁴ <http://www.farmweekly.com.au/news/agriculture/cropping/general-news/new-canola-weed-control-option/2714416.aspx>

⁹⁵ http://www.australianoilseeds.com/about_aof/news/glyphosate_as_a_desiccant_in_sunflowers

⁹⁶ <http://www.gmwatch.org/latest-listing/1-news-items/13325-csiro-in-bed-with-multinationals>

⁹⁷ <http://www.pnas.org/content/109/44/17995.full.pdf+html>

⁹⁸ <http://www.sciencedirect.com/science/article/pii/S0025326X14000228>

⁹⁹ <http://www.ncbi.nlm.nih.gov/pubmed/23842577> The state of US health, 1990-2010: burden of diseases, injuries, and risk factors

*Increases in Alzheimer's disease, breast cancer, oesophageal cancer, congenital anomalies "and a growing burden of disability, particularly from mental disorders" are all acknowledged.*¹⁰⁰

Substantial increase in neurological deaths 1979-2010

Ten major developed Western countries and 10 smaller Western countries were studied.¹⁰¹ 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; in particular early onset Parkinson's, Alzheimer's and other Dementias, and Motor Neurone Disease. Female neurological deaths in 9 out of 10 countries were greater than males. The authors thought the causes were likely to be epigenetic rather than hereditary. *"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."*

Another paper elucidated the pathological mechanisms by which the herbicide glyphosate could cause Parkinson's disease and other neurodegenerative disorders.¹⁰²

UK cancer survival rates trail 10 years behind other European countries

Cancer survival rates in the UK are still lagging more than two decades behind those achieved in many European countries, according to new analysis by campaigners on 25th March 2015.¹⁰³ The Concord-2 global study looked at survival rates in 67 countries for patients diagnosed with lung, breast, colon and stomach cancers in 1995 to 1999, compared with levels in 2005 to 2009.

Genetically-engineered crops, glyphosate and the deterioration of health in the United States of America. Swanson *et al.*¹⁰⁴

Abstract: A huge increase in the incidence and prevalence of chronic diseases has been reported in the United States (US) over the last 20 years. Similar increases have been seen globally. The herbicide glyphosate was introduced in 1974 and its use is accelerating with the advent of herbicide-tolerant genetically engineered (GE) crops. Evidence is mounting that glyphosate interferes with many metabolic processes in plants and animals and glyphosate residues have been detected in both. Glyphosate disrupts the endocrine system and the balance of gut bacteria, it damages DNA and is a driver of mutations that lead to cancer.

In the present study, US government databases were searched for GE crop data, glyphosate application data and disease epidemiological data. Correlation analyses were then performed on a total of 22 diseases in these time-series data sets. The Pearson correlation coefficients are highly significant (< 10⁻⁵) between glyphosate applications and hypertension (R = 0.923), stroke (R = 0.925), diabetes prevalence (R = 0.971), diabetes incidence (R = 0.935), obesity (R = 0.962), lipoprotein metabolism disorder (R = 0.973), Alzheimer's (R = 0.917), senile dementia (R = 0.994), Parkinson's (R = 0.875), multiple sclerosis (R = 0.828), autism (R = 0.989), inflammatory bowel disease (R = 0.938), intestinal infections (R = 0.974), end stage renal disease (R = 0.975), acute kidney failure (R = 0.978) cancers of the thyroid (R = 0.988), liver (R = 0.960), bladder (R = 0.981), pancreas (R = 0.918), kidney (R = 0.973) and myeloid leukaemia (R = 0.878).

The Pearson correlation coefficients are highly significant (< 10⁻⁴) between the percentage of GE corn and soy planted in the US and hypertension (R = 0.961), stroke (R = 0.983), diabetes prevalence (R =

¹⁰⁰ <http://www.ncbi.nlm.nih.gov/pubmed/23668584> UK health performance: findings of the Global Burden of Disease Study 2010

¹⁰¹ <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)

¹⁰² <http://www.sciencedirect.com/science/journal/08920362>

<http://www.activistpost.com/2012/04/roundup-herbicide-linked-to-parkinsons.htm>

¹⁰³ <http://www.theguardian.com/society/2015/mar/24/uk-cancer-survival-rates-trail-10-years-behind-those-in-european-countries>

¹⁰⁴ http://www.organic-systems.org/journal/92/JOS_Volume-9_Number-2_Nov_2014-Swanson-et-al.pdf

0.983), diabetes incidence (R = 0.955), obesity (R = 0.962), lipoprotein metabolism disorder (R = 0.955), Alzheimer's (R = 0.937), Parkinson's (R = 0.952), multiple sclerosis (R = 0.876), hepatitis C (R = 0.946), end stage renal disease (R = 0.958), acute kidney failure (R = 0.967), cancers of the thyroid (R = 0.938), liver (R = 0.911), bladder (R = 0.945), pancreas (R = 0.841), kidney (R = 0.940) and myeloid leukaemia (R = 0.889). The significance and strength of the correlations show that the effects of glyphosate and GE crops on human health should be further investigated.

In the US glyphosate and GM crops have high correlations with human diseases, including cancers. Public Health England shares my concern about the prevalence of chronic diseases in the UK such as obesity, type 2 diabetes, cardiovascular disease and cancer.¹⁰⁵

Devastating Impacts of Glyphosate Use with GMO Seeds in Argentina¹⁰⁶

Published on the I-SIS website on 18/02/2015 by Dr Medardo Ávila-Vázquez, a paediatrician and neonatologist at the Faculty of Medical Sciences, National University of Córdoba, Argentina.

"Widespread GM soybean cultivation and accompanying pesticide spraying is wreaking havoc on the health of millions."

He is the coordinator of the Physicians of Crop-Sprayed Towns, a University Network for Environment and Health that campaigns against agrochemical spraying and provides medical treatment to villages suffering from illnesses as a result of agrochemical exposure. Since noticing the health of his patients deteriorate and patterns of illness change, he has campaigned tirelessly for the protection of local people, particularly children who are some of the worst affected.

"The model of agricultural production foisted on Argentina by international biotechnology companies has led to 858 % increase in the amount of pesticides used per year, resulting in a massive environmental and health impact in the region." ... "Glyphosate is the most commonly used toxic agrochemical in Argentina, comprising 64 % of total sales, and 200 million litres of glyphosate were applied during the last crop season." ... "The clinical manifestations that physicians working in the crop-sprayed towns find in patients are consistent with the results of scientific research on the effects of various pesticides including glyphosate on experimental animals. Laboratory research by our Scientists show how glyphosate acts on embryonic development to produce birth defects [8], and how this poison damages DNA molecules in the cell nucleus, promoting mutant cell lines that will cause cancer if they cannot be eliminated by the individual [9-11].

Also, a number of scientific papers worldwide show how exposure to toxic agrochemicals significantly increases the rate of birth defects, miscarriages, cancer, and hormonal disorders in people subjected to repeated sprayings [12-15]."

Fig 1. The rise in birth defects correlates with the rise in cultivation of GM glyphosate-tolerant soybeans in Chaco, Argentina. Birth defects per 10 000 live births increased from approx. 15/10,000 live births in 1997 to approx. 82/10,000 live births in 2008.

Cancer Research UK website shows similar trends for certain cancers

The Cancer Research UK (CRUK) website shows similarly increasing trends over time in graphs from 1975 (when glyphosate was introduced) for thyroid cancer,¹⁰⁷ breast cancer,¹⁰⁸ prostate cancer,¹⁰⁹ malignant melanoma,¹¹⁰ liver cancer,¹¹¹ myeloma,¹¹² and anal cancer.¹¹³

¹⁰⁵ Personal communication: email January 2015.

¹⁰⁶ http://www.i-sis.org.uk/Devastating_Impacts_of_Glyphosate_Argentina.php

¹⁰⁷ <http://www.cancerresearchuk.org/cancer-info/cancerstats/types/thyroid/incidence/>

¹⁰⁸ <http://www.cancerresearchuk.org/cancer-info/cancerstats/types/breast/incidence/#trends>

¹⁰⁹ <http://www.cancerresearchuk.org/cancer-info/cancerstats/types/prostate/incidence/uk-prostate-cancer-incidence-statistics#trends>

¹¹⁰ <http://www.cancerresearchuk.org/cancer-info/cancerstats/types/skin/incidence/uk-skin-cancer-incidence-statistics#trends>

¹¹¹ <http://www.cancerresearchuk.org/cancer-info/cancerstats/types/liver/incidence/#trends>

¹¹² <http://www.cancerresearchuk.org/cancer-info/cancerstats/types/myeloma/incidence/#trends>

Britain involved with corporations at the expense of the health of the public

Obesity crisis: Sugar: spinning a web of influence¹¹⁴

Public health scientists are involved with the food companies being blamed for the obesity crisis

Report by freelance journalist, Jonathan Gornall.

“An investigation by The BMJ has uncovered evidence of the extraordinary extent to which key public health experts are involved with the sugar industry and related companies responsible for many of the products blamed for the obesity crisis through research grants, consultancy fees, and other forms of funding.” There is an interactive infographic, showing the ‘Tangled web: connections between the sugar industry and UK government advisory bodies. Links represent research funding, consultancy, and advisory board membership’

Among the main targets in the United Kingdom for an industry facing increasing pressure from government to reduce the health harms caused by its products are researchers working on nutrition issues for two key government funded organisations—the Scientific Advisory Committee on Nutrition (SACN) and the Medical Research Council’s Human Nutrition Research (HNR) unit at Cambridge. The BMJ has found that for more than a decade funding from industry has flowed to scientists involved with the research unit. Scientists working on Medical Research Council (MRC) projects have received research funding from organisations including Coca-Cola, PepsiCo, Nestlé, the Institute of Brewing and Distilling, Weight Watchers International, NutriLicious (a public relations firm specialising in conveying “nutrition and health messages” for the food industry), Sainsbury’s, W K Kellogg Institute, and GlaxoSmithKline.

Others received consultancy fees from Boots, Coca-Cola, Cereal Partners UK, Mars, and Unilever Foods. They have also sat on advisory boards for Coca-Cola, the Food and Drink Federation, and the Institute of Grocery Distributors.

Figures obtained through freedom of information requests suggest industry funding of the work of scientists in the Human Nutrition Research unit alone may have averaged close to £250 000 (€330 000; \$380 000) a year for the past decade. Industry funding for the three years from 2010 to 2012 totalled £697 469, peaking at £380 874 in 2010—5% of the unit’s income for the year...Researchers within the MRC’s units were ‘encouraged to work closely with the private sector, including the food industries...’

Funding pressures

“For Alan Jackson, chair of SACN from 2001-2009, it is government funding policy that is to blame for driving scientists into the arms of industry.”

Big food, big pharma: is science for sale¹¹⁵

Editor’s Choice: Elizabeth Loder, acting head of research *The BMJ*. “We have grown accustomed to allegations of conflicts of interest, biased research, and manipulative marketing on the part of the drug industry. Sadly, this is not the only area where there is reason to be concerned about corporate influences on public policy. Crowcroft and colleagues examine the controversy over the UK government decision on public funding for a new vaccine (Bexsero) for meningococcal disease.¹¹⁶ . The problems they outline are all too familiar: “lobbying may have influenced the alteration” of the original decision. Links between some “vocal clinicians” and the drug industry were not disclosed. The lack of transparency makes it unsurprising that “conspiracy theories emerged, including the idea of undue influence of industry.”

¹¹³ <http://www.cancerresearchuk.org/cancer-info/cancerstats/types/anal-cancer/Incidence/#Trends>

¹¹⁴ <http://www.bmj.com/content/bmj/350/bmj.h231.full.pdf>

¹¹⁵ <http://www.bmj.com/content/350/bmj.h795>

¹¹⁶ doi:[10.1136/bmj.h308](https://doi.org/10.1136/bmj.h308)

Corporate lobbyists find it easier to access the Prime Minister than his own MPs

An Editorial in the *British Medical Journal* on 11/01/2014 was entitled: A shameful episode.¹¹⁷

The UK government did a sudden U-turn from its agreement that a minimum price on a unit of alcohol would be introduced across the United Kingdom. The Government had previously said: “*The evidence for substantial health savings and cost savings was clear.*” ... “*Scotland had introduced a minimum price (though now under legal challenge by the drinks industry) and the UK Prime Minister had given his personal commitment that England and Wales would follow suit.*” Jeremy Browne the Home Office Minister later said that the government didn’t have “*enough concrete evidence.*” However, Jonathan Gornall, in a BMJ investigation, discovered: “*the extent and effects of contact between ministers and interest groups lobbying against the minimum unit price.*”

Gornall concluded that the consultation itself was a sham. “*While MPs struggled to gain access to ministers, representatives of alcohol companies and major supermarkets had easy access – made easier by the well-oiled revolving doors between industry and special advisory posts.*” ... “*Academics quoted by Gornall express concern about the misuse of the scientific process by the alcohol industry and its mouthpiece.*” They were using tactics reminiscent of the tobacco industry.

*Documents released under a freedom of information request showed that between the coalition taking power in May 2010 and the end of 2013 the Department of Health alone had 130 meetings with representatives of the industry.*¹¹⁸

The extensive investigation shows “beyond doubt that commercial interests are currently in control of key decisions about the public’s health.”

The UK Government and the GM Industry: colluding to promote GM crops and foods, undermine consumer choice and ignore environmental harm (published by Genewatch UK, May 2014)¹¹⁹

“This briefing summarises information collected by GeneWatch UK using requests under the Freedom of Information Act and the Environmental Information Regulations (known as Fols). It demonstrates close co-operation between the GM industry and the UK Government, including a joint strategy to promote GM crops and foods in the press and media.

The documents:

Reveal how foreign multinational GM companies are running the Government’s PR strategy on GM crops by controlling how public and private money will be invested in research;

Show that taxpayers’ money is being spent on PR for the GM industry rather than delivering better food and farming;

Suggest close co-operation with GM soya importers to pressure retailers to allow meat and dairy suppliers to use Monsanto’s RoundUp® Ready GM soya for animal feed and prevent consumers from accessing GM-free fed meat and dairy products;

Highlight the extent to which the GM industry’s role in Government policy is being kept hidden from the public.”

Syngenta is the powerhouse of the UK government’s agrochemical policy

Dr Peter Campbell Head of Ecotoxicology: Principal Scientific Officer York Pesticides Safety Directorate (PSD September 1991 – November 1997); now the Chemical Regulations Directorate (CRD) became Head of Ecological Sciences, Syngenta (October 1997 – September 2007) at Jealott’s Hill International Research Centre, Bracknell UK.¹²⁰

Dr Helen Thompson Senior Bee Scientist from the Food & Environment Research Agency (Fera) defected in 2013, after having done commissions for Syngenta.¹²¹ FoI declarations discovered a compromising letter from Owen Paterson to Syngenta Switzerland assuring them of his support

¹¹⁷ <http://www.bmj.com/content/348/bmj.g110>

¹¹⁸ jgornall@mac.com BMJ 2014;348:f7646

¹¹⁹ http://www.genewatch.org/uploads/f03c6d66a9b354535738483c1c3d49e4/Fol_summary_May14.pdf

¹²⁰ <http://uk.linkedin.com/pub/peter-campbell/4/283/6ba>

¹²¹ <http://www.theguardian.com/environment/2013/jul/26/government-bee-scientist-pesticide-firm>

against the neonicotinoid ban in Europe.¹²² Dr Campbell had the power to direct Syngenta funding wherever he saw fit. In 2009 Syngenta gave £1 million to fund Warwick University and Rothamsted Research “to help to improve honeybee health”. (Rothamsted had lost funding for its Bee Unit in 2006). Syngenta pioneered Operation Bumblebee in the UK and in 2010 announced expansion of programmes across Europe; up to €1 million over 5 years. Programmes included “*What Operation Bumblebee can do for your golf course.*” Syngenta had representatives on the Advisory Committee on Pesticides (ACP), the Committee on Toxicity of Chemicals in Foods, Consumer Products and the Environment (CoT), and Dr Campbell himself was on the Panel to choose the Pollinator Initiative Projects.¹²³ Syngenta contributed to the Government’s Foresight Future of Farming Report.¹²⁴ Syngenta’s parent company AstraZeneca had two representatives on CoT.

Dr James Cresswell received £136,000 from Syngenta to fund his research at Exeter in 2012.¹²⁵ Syngenta gave scholarships for students at Exeter University in 2012¹²⁶ and with the Biotechnology and Biological Research Council (BBSRC) funded the BEEHAVE honeybee model.¹²⁷ Syngenta also applied to EFSA GMO Panel for GM Roundup®-tolerant maize:¹²⁸ “*The UK Competent Authority and Syngenta applied for placing on the market of a GM, herbicide tolerant (glyphosate) maize GA21 for food and feed uses, import, processing and cultivation.*”

Syngenta’s parent company is AstraZeneca. AstraZeneca manufactures six different anti-cancer drugs mainly aimed at breast and prostate cancer. The Corporation has links in Asia, including Hospitals in China, Japan, Korea, and collaborators in Russia. AstraZeneca’s Oncology Website¹²⁹ has the following portentous prediction: “*Cancer claims over 7 million lives every year and the number continues to rise. Deaths are estimated to reach 12 million by 2030.*”

Michael Pragnell MA MBA was the founder of Syngenta and CEO of Syngenta AG based in Switzerland (from its public listing in 2000 to the end of 2007). He was appointed a Trustee of Cancer Research UK (CRUK) in March 2010 and Chairman in November 2010. CRUK is donating money (£450 million/year) to the Government’s Strategy for UK Life Sciences¹³⁰ and AstraZeneca is providing 22 compounds to academic research to develop medicines.

CRUK website on Pesticides and Cancer denies links to pesticides: “*For now, the evidence is not strong enough to give us any clear answers. But for individual pesticides, the evidence was either too weak to come to a conclusion, or only strong enough to suggest a “possible” effect. The scientific evidence on pesticides and cancer is still uncertain and more research is needed in this area.*”¹³¹

Scientist who developed a precursor to Roundup® Ready Canola appointed to Rothamsted¹³²

Professor Maurice Moloney became Director and Chief Executive of Rothamsted Research on 15th April 2010. According to BBSRC: “*Before moving to Calgary, Professor Moloney led the Cell Biology group at Calgene Inc. in Davis, California, developing the world’s first transgenic oilseeds, which resulted in RoundUp Ready® Canola and other novel crops. He was previously a Royal Society*

¹²² <http://www.guardian.co.uk/environment/interactive/2013/apr/29/environment-secretary-letter-syngenta-insecticide-ban>

¹²³ <http://www.bbsrc.ac.uk/funding/opportunities/2009/insect-pollinators-initiative.aspx>

¹²⁴ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/288329/11-546-future-of-food-and-farming-report.pdf Page 88 Wheat.

¹²⁵ <http://www.theguardian.com/environment/damian-carrington-blog/2012/oct/22/bees-pesticides>

¹²⁶

http://www.exeter.ac.uk/media/universityofexeter/internationalexeter/pdfs/agentsnewsletters/January_2015.pdf

¹²⁷ <http://www.bbsrc.ac.uk/news/food-security/2014/140304-pr-virtual-bees-unravel-causes-of-decline.aspx>

¹²⁸ <http://www.efsa.europa.eu/en/efsajournal/pub/2480.htm>

¹²⁹ <http://www.astrazeneca.co.uk/medicines/oncology>

¹³⁰ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/32457/11-1429-strategy-for-uk-life-sciences.pdf

¹³¹ <http://www.cancerresearchuk.org/cancer-info/healthyliving/cancercontroversies/pesticides/>

¹³² <http://www.rothamsted.ac.uk/news/new-director-rothamsted-research>

European Postdoctoral Fellow at the University of Lausanne, Switzerland. Professor Moloney is currently Chief Scientific Officer of SemBioSys Genetics Inc, based in Calgary, Canada. He founded the company in 1994 and has maintained this role alongside a successful academic career at the University of Calgary, where he serves as NSERC/Dow AgroSciences Industrial Research Professor of Plant Biotechnology.”

Prof Moloney was considered in Canada by his colleagues in genetics to be reckless with the environment. His company SemBioSys focused on producing pharmaceuticals in the oil crops canola (rapeseed) and safflower. One Canadian geneticist said: “Currently safflower-grown human insulin has been open field tested in the state of Washington in a sagebrush wild area of the state which is the habitat for a number of threatened wild species that can be poisoned by ingesting insulin”... “In Canada and the United States open field tests of crop bio-pharmaceuticals are undertaken with little or no respect for the environmental consequences of the open field releases... Regulators show cavalier disregard for the safety of threatened species as well as human beings in proposed release of the GM pharm crop.”¹³³

Prof Moloney departed for Australia to work for the Commonwealth Scientific and Industrial Research Organisation (CSIRO) in December 2013.¹³⁴

Open letter from America to the Prime Minister warning the UK against GM crops: November 2014

Living with GMOs: Citizen to Citizen¹³⁵ **From 57 million citizens in the US to citizens, politicians, and regulators in the UK and the rest of the EU about the hazards of genetically modified crops** We, the undersigned, are sharing our experience and what we have learned with you so that you don't make our mistakes. Signatories include NGOs, groups, academics, scientists, farmers, food manufactures, and high profile individuals representing some 57 million Americans.

Extracts: “A recent review found that between 1996 and 2011, farmers who planted Roundup Ready crops used 24% more herbicide than non-GMO farmers planting the same crops. This pesticide treadmill means that in the last decade in the US at least 14 new glyphosate-resistant weed species have emerged, and over half of US farms are plagued with herbicide-resistant weeds.” **They outlined eight independent papers describing Environmental Harm and six about the Threat to Human Health.** “Americans are reaping the detrimental impacts of this risky and unproven agricultural technology. **EU countries should take note: there are no benefits from GM crops great enough to offset these impacts. Officials who continue to ignore this fact are guilty of a gross dereliction of duty.**

We strongly urge you to resist the approval of genetically modified crops, to refuse to plant those crops that have been approved, to reject the import and/or sale of GM-containing animal feeds and foods intended for human consumption, and to speak out against the corporate influence over politics, regulation and science.”

The Open letter from America was passed from the Prime Minister’s Office to Defra. Did Defra draft the Minister’s letter without telling him it was from 57 million citizens?

Extracts from the reply from Lord de Mauley, Defra Minister, “to Directors of Beyond GM.”

It was clear that the Minister hadn't read the letter, or realised that it was an Open letter from 57 million citizens from the US, but relied on signing Defra's letter of denial¹³⁶

Extract: “However, to pick up on your point on contamination, cross-pollination is, again, a normal process between compatible plant species and there is nothing different about GM crops in this

¹³³ <http://www.i-sis.org.uk/gmSaffloweHumanPro-Insulin.php> h

¹³⁴ <http://www.bbsrc.ac.uk/news/people-skills-training/2013/130808-pr-new-post-for-prof-maloney.aspx>

¹³⁵ <http://www.theletterfromamerica.org/>

¹³⁶ http://beyond-gm.org/wp-content/uploads/2015/01/BGM_Defra-letter_151214.pdf

respect"... "The UK Government regards safety as paramount and we will only agree to planting of GM crops or the marketing of GM foods **if it is clear that people and the environment will not be harmed.**"

Background on systemic neonicotinoid insecticides: regulation by industry

Society of Environmental Toxicology and Chemistry (SETAC); headed by industry

Dr Peter Campbell of Syngenta is currently the World President of SETAC. SETAC is a society controlled by industry and the US EPA. In 2011, SETAC held a Workshop on Pesticide Risk Assessment for Pollinators January 15-21, 2011, at Pellston, Florida. It was by invitation only; 'world experts' of whom many were from industry (Helen Thompson, now working for Syngenta, and Mark Clook CRD were present from the UK). David Fischer from Bayer CropScience and Thomas Moriarty from the US EPA Office of Pesticide Programs and Team Leader, US EPA Bee Unit wrote the Executive Summary.¹³⁷

The Summary shows that the pesticides industry and all of the environmental protection agencies were aware of the following, which up until then, they had consistently denied:

- That the systemic neonicotinoid pesticides are harmful to bees.
- That the tests and protocols that had allowed registration of the systemic pesticides were not adapted to assess potential hazard and risk from this type of pesticide.
- Despite knowing all this, the Protection Agencies had allowed the pesticides industry to keep neonicotinoids on the market while they carried out further research.
- That many of the projects suggested for the future have already been done by independent scientists. These were merely delaying tactics.

Admission on Page 12 *"Many who are familiar with pesticide risk assessment recognize that the methodology and testing scheme for foliar application products (where exposure may be primarily through surface contact) is not adapted to assess potential hazard and risk from systemic pesticides".*

European Commission denied our claim that the registration of clothianidin was illegal

One of our complaints to the European Ombudsman (1089/2012/BEH) was that clothianidin had been registered illegally, since its half-life in a range of soils was an average of 545 days with a maximum of 1386 days (Source: Footprint Database). According to the Directive on Plant Protection Products (EC) 1107/2009;¹³⁸ Annex II, page 43, persistence in the soil, approval should not be given if the half-life in soil is greater than 120 days ('based on half-life data collected under appropriate conditions, which shall be described by the applicant').

Michael Flüh, replied on behalf of Commissioner John Dalli, *"The allegation as regards the illegality of the registration of clothianidin is strongly rejected. The assessment of clothianidin, carried out by a Rapporteur Member State (RMS) and peer reviewed by experts from all Member States concluded that safe uses of this substance exist."*

Conditional¹³⁹ registration of clothianidin in the US

On May 30, 2003, Daniel C Kenny of the US EPA Registration Division granted conditional registration for *clothianidin* to be used for seed treatment on corn and canola (oil seed rape) to Bayer

¹³⁷

http://c.ymcdn.com/sites/www.setac.org/resource/resmgr/publications_and_resources/executivesummarypollinators.pdf?hhSearchTerms=SETAC+and+Pellston+and+Workshop

¹³⁸ <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:309:0001:0050:EN:PDF>

¹³⁹ 'Conditional' means that they are allowed to sell it on condition that they fulfil all the data gaps within a year

Corporation.¹⁴⁰ In the 19-page document, the EPA scientists (as opposed to the Registration Division) had assessed the risks as: *“Clothianidin is highly toxic to honey bees on an acute contact basis. It has the potential for toxic chronic exposure to honey bees, as well as other non-target pollinators, through the translocation of clothianidin residues in nectar and pollen. In honey bees, the effects of this toxic chronic exposure may include lethal and/or sub-lethal effects in the larvae and reproductive effects in the queen. The fate and disposition of clothianidin in the environment suggest a compound that is a systemic insecticide that is persistent and mobile, stable to hydrolysis, and has potential to leach into ground water, as well as run-off to surface waters. There is evidence of effects on the rat immune system and juvenile rats appear to be more susceptible to these effects.”* Summary of Data Gaps. Page 18. There were gaps in Toxicology; Residue Chemistry; Environmental Fate Data and Ecological Effects Data. These included: Additional studies on *Developmental Immunotoxicity and Mutagenicity. Data on aerobic aquatic metabolism and a Seed leaching study. Whole sediment acute toxicity to freshwater invertebrates. Field test for pollinators.* There is no evidence that the data gaps were filled in.

Bayer uses the action of neonicotinoid suppression of the immune system to kill colonial insects such as termites (Premise 200SC)¹⁴¹ and ants (Baythion I Myrelokkedaase Denmark)

“Premise 200SC plus Nature causes termites to succumb to disease and death by naturally occurring organisms”... “Imidacloprid binds to nicotinic acetylcholine receptors at the nervous system...they stop feeding, grooming and become disorientated”...“Low doses of Premise 200SC such as the edge of the Treated Zone, disorientate the termites and cause them to cease their natural grooming behaviour. Grooming is important for termites to protect them against pathogenic soil fungi. When termites stop grooming, the naturally occurring fungi in the soil attack and kill the termites. Premise 200 SC makes fungi 10,000 times more dangerous to termites. Nature assists Premise in giving unsurpassed control. This control is Premise 200SC plus Nature.”

Honey bees groom each other. Buzz about Bees website states: *A natural defence against Varroa mites for bees is grooming. Bees also groom in defence against diseases and fungi.*¹⁴²

17/04/2012 EU Ombudsman investigates whether the European Commission should do more to combat increased bee mortality¹⁴³

This followed a complaint from the Austrian Ombudsman Board, alleging that the Commission has failed to take into account new scientific evidence arguing in favour of restricting the use of the (neonicotinoid) insecticides. The Ombudsman had asked the Commission to submit an opinion by 30 June 2012.

EFSA Scientific Opinion on the science behind the development of a risk assessment of Plant Protection Products on bees (*Apis mellifera*, *Bombus* spp. and solitary bees) 23 May 2012¹⁴⁴

The trade-offs: Farmers Page 10 *There is a trade-off between plant protection and protecting the ecosystem services, pollination, hive products and biodiversity. From a farmer’s point of view plant protection may be more important than hive products. While for beekeepers, hive products are of greater importance. Society may give a high value to protection of biodiversity (to ensure delivery of other ecosystem services such as aesthetic values, cultural services and genetic resources).*

Risk Managers Page 131 *The final decision on protection goals needs to be taken by risk managers. There is a trade-off between plant protection and the protection of bees. The effects on pollinators need to be weighed against increase in crop yields due to better protection of crops against pests.*

¹⁴⁰ <http://www.epa.gov/opprd001/factsheets/clothianidin.pdf>

¹⁴¹ http://www.elitepest.com.sg/brochure/Premise_200SC.pdf

¹⁴² <http://www.buzzaboutbees.net/honey-bee-health.html>

¹⁴³ <http://www.ombudsman.europa.eu/en/press/release.faces/en/11428/html.bookmark>

¹⁴⁴ <http://www.efsa.europa.eu/en/efsajournal/pub/2668.htm>

Big money, economics and politics take priority over human health and biodiversity.

Syngenta had access to EFSA's press release announcing a ban on three neonicotinoid insecticides before its publication. Bayer and Syngenta threaten to sue EFSA¹⁴⁵

Corporate Europe Observatory reports: "Private letters reveal Syngenta and Bayer's furious lobbying against EU measures."

There is a long correspondence between Syngenta, Bayer and EFSA. Bayer commissioned... 'an independent panel of bee scientists' ...in fact it was Exponent® Inc. which specializes in defending products from regulation. Exponent® came to the conclusion that "EFSA risk assessments use unrealistic exposure values, make inappropriate comparisons to toxicity threshold levels, fail to consider critical bee behaviour, and inappropriately discount monitoring and field studies", and therefore "overstates the risks to honey bees".¹⁴⁶ Syngenta had access to EFSA's press release before its publication. The Corporation could not persuade EFSA's Executive Director, Catherine Geslain-Lanéelle, to alter the wording of the Press Release. Syngenta sent an extremely aggressive letter to the agency, claiming that the press release was "incorrect in a major and highly relevant aspect but EFSA also moves out of its area of responsibility and mandate". Syngenta even threatened to take legal action and set a deadline: "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."¹⁴⁷

EFSA Press Release: finally recommends bans of three neonicotinoids on flowering crops¹⁴⁸

16 January 2013

"EFSA scientists have identified a number of risks posed to bees by three neonicotinoid insecticides. The Authority was asked by the European Commission to assess the risks associated with the use of clothianidin, imidacloprid and thiamethoxam as seed treatment or as granules, with particular regard to: their acute and chronic effects on bee colony survival and development; their effects on bee larvae and bee behaviour; and the risks posed by sub-lethal dose of the three substances. In some cases EFSA was unable to finalise the assessments due to shortcomings in the available data."

EFSA Chief of Pesticide Risk Assessment had discovered the data gaps

Herman Fontier, Head of the Pesticide Risk Assessment Peer Review (PRAPeR) Unit came to London to give evidence to the Environmental Audit Committee on 06/02/2013¹⁴⁹

Q522 Caroline Nokes MP: "Last week, Bayer told the Committee that your imidacloprid risk assessment at EFSA had not taken into account all of the available research, including studies that had been referenced in earlier draft reports. Their feeling was that EFSA had not given sufficient weight to real-world higher-tier field trials, which showed that imidacloprid was safe. How would you respond to that criticism?"

Herman Fontier: "I am aware of this allegation made by Bayer; that leaves me a little puzzled, because we have indeed requested applicants to submit all the available data and they have done so, I thought. They had submitted a data package, which we have evaluated from the first to the last study".

On questioning by the Chairman, Herman Fontier said: "The British Government is completely free to ignore recommendations from European safety regulators that controversial nerve-agent pesticides

¹⁴⁵ <http://corporateeurope.org/agribusiness/2013/04/pesticides-against-pollinators>

¹⁴⁶

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

¹⁴⁷

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

¹⁴⁸ <http://www.efsa.europa.eu/en/press/news/130116.htm>

¹⁴⁹ <http://www.publications.parliament.uk/pa/cm201213/cmselect/cmenvaud/668/668.pdf>

should not be used on crops visited by bees. It was merely a risk assessment – and it was up to individual EU member states whether or not to act on it.

Environment Correspondent for *The Independent* reported: “In Britain the Environment Secretary, Owen Paterson, has already indicated that the Government is likely to ignore the recommendation and is opposed to an immediate ban on three neonicotinoids highlighted by the EFSA report, imidacloprid, clothianidin and thiamethoxam, made by the giant agribusiness companies Bayer and Syngenta. Mr Paterson’s Department for Environment, Food and Rural Affairs (Defra) is carrying out its own research into neonicotinoids and bees.”¹⁵⁰

Were the changes of staff at EFSA significant? Did industry threats to sue frighten the EC?¹⁵¹

Catherine Geslain-Lanéelle EFSA CEO resigned on 24 July 2013. In July EFSA had issued new guidelines for two-year whole food feeding studies...but they were for future establishment of protocols and it sounded optional; “the decision on a case by case basis”.¹⁵²

Herman Fontier Head of EFSA’s Pesticides Unit disappeared. When earlier he came to give testimony to the Parliamentary Environmental Audit Committee¹⁵³ he had challenged an allegation by Bayer (and on BBC Radio 4.). By September 2013 he had been replaced by Luc Mohimont as Acting Head.

José Vicente Tarazona was appointed as definitive Head of EFSA’s Pesticide Unit by February 4th 2014. Were the departures precipitated by a flurry of threatened or actual legal actions by the pesticides companies? Syngenta took legal action against the European Commission’s decision to suspend the use of thiamethoxam on bee attractive crops which they claimed was on the basis of a flawed process, an inaccurate and incomplete assessment by the European Food Safety Authority?¹⁵⁴ Bayer’s action against the 2-year moratorium on clothianidin and imidacloprid which they described as ‘*unjustified*’, saying it went beyond the commission’s existing regulatory framework.¹⁵⁵ 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.

EFSA’s rejection of Fera’s Bumblebee Study for which the British Government had been eagerly awaiting. Discussion by the UK Advisory Committee on Pesticides¹⁵⁶

The ACP with Prof Ian Boyd, Defra Chief Scientist, found the results difficult to interpret because the control bees had been contaminated by another neonicotinoid. Defra went to re-do the statistics.

EFSA’s opinion of the UK study

Evaluation of the FERA study on bumble bees and consideration of its potential impact on the EFSA conclusions on neonicotinoids:¹⁵⁷ “*The current assessment concluded that, due to the weaknesses of the study design and methodology, the study did not allow it to draw any conclusion on the effects of neonicotinoids on exposed bumble bee colonies, and confirmed that the outcome of the conclusions drawn for the three neonicotinoid insecticides remains unchanged.*”

¹⁵⁰ <http://www.independent.co.uk/environment/green-living/government-to-ignore-european-ban-on-neonicotinoid-pesticides-8483916.html>

¹⁵¹ On 24 July 2013 Catherine Geslain-Lanéelle, Executive Director of the European Food Safety Authority (EFSA), today announced that she is resigning to take up a new post as Director General for agricultural, agri-food and territorial policies in the French Ministry of Agriculture, Food and Forestry on 1 September 2013

¹⁵² <http://www.efsa.europa.eu/en/efsajournal/doc/3347.pdf>

¹⁵³ <http://www.publications.parliament.uk/pa/cm201213/cmselect/cmenvaud/668/668.pdf>

¹⁵⁴ <http://www.syngenta.com/global/corporate/en/news-center/news-releases/pages/130827.aspx>

¹⁵⁵ <http://www.ibtimes.com/bayer-cropscience-fights-europes-pesticide-ban-petition-blasts-bee-killing-chemical-giant-1403820>

¹⁵⁶ <http://www.pesticides.gov.uk/guidance/industries/pesticides/advisory-groups/acp/ACP-News/ACP-359-29-January-2013-Detailed-Record-of-Discussion>

¹⁵⁷ <http://www.efsa.europa.eu/en/efsajournal/pub/3242.htm>

A Pan-European field experiment has been designed and will be delivered during 2014-2015

Defra has volunteered CEH researchers to design, and oversee, the delivery of the trial of systemic neonicotinoid pesticides.¹⁵⁸ CEH said: *“This research is co-funded by Bayer CropScience AG and Syngenta Crop Protection, but controls are in place to ensure the experimental design and the reporting of its research (whatever the outcome) is independent.”*

Syngenta and Bayer are part funding, and inevitably have control, over the design of the Pan-European Pollinator Study by the Centre for Ecology and Hydrology (CEH) in 2015

Syngenta and Bayer consistently deny that neonicotinoid insecticides are harming bees. Joan Walley MP, Chair of the Environmental Audit Committee (EAC), wrote to Professor Bailey CEH to ask to be sent the correspondence with industry. The EAC wished to be reassured that CEH had control over the Study.¹⁵⁹

In fact, Syngenta and Bayer are controlling the study. According to experts, the study will not meet the protection goals defined by the European Food Standards Agency (EFSA).

- Firstly, bumblebees and solitary bees are not included in the study (wild pollinators are more important for pollination of crops than managed honey bees. Bumblebees are more sensitive to imidacloprid than honey bees.)^{160, 161}
- Secondly, the CEH study is designed to detect a 20% detrimental effect on bee colony sizes, while EFSA requires 7%.
- Finally, although it was recommended by the CEH that the experiment should run for at least three years, to allow for inter-annual variability due to weather and other factors, Syngenta and Bayer have said that they will only fund one year. Meanwhile, the Government has privatised Fera, the Food and Environment Research Agency.¹⁶²

Conflicts of Interest in the EU: the Committees are controlled by industry; ‘professional’ members rotate around the Committees

European Food Safety Authority (EFSA), founded in 2002, has been accused of conflicts of interest

EFSA has been regularly challenged by four independent organisations, Corporate Europe Observatory, Earth Open Source (UK), Testbiotech (Germany) and Criigen (France).

In 2011 Earth Open Source published an 18-page document: Europe’s pesticide and food safety regulators – Who do they work for?¹⁶³ *“Some prominent EFSA regulators have conflicts of interest, holding positions in organisations that are funded by the same companies whose products they are supposed to regulate. This report shows that over a period of many years, influential EFSA managers and regulators have been heavily involved with a US-based organisation called the International Life Sciences Institute (ILSI), which is funded by multinational pesticide, chemical, GM seed, and food companies.”* Angelo Moretti resigned in 2011 from EFSA after he had failed to declare conflicts of interest because he had shares in a company that helped companies needing to comply with EU Regulations. *“ILSI has also taken control of the environmental risk assessment for GM crops. It has set up a body called the Center for Environmental Risk Assessment (CERA) to ‘develop and apply*

¹⁵⁸ <http://www.ceh.ac.uk/science/impacts-neonicotinoids-honeybees-largescale-field-experiment.html>

¹⁵⁹ <http://www.parliament.uk/documents/commons-committees/environmental-audit/Chair-Neonicotinoids-research.pdf>

¹⁶⁰ <http://www.sciencemag.org/content/336/6079/351> Treated colonies had a significantly reduced growth rate and suffered an 85% reduction in production of new queens compared with control colonies.

¹⁶¹ <http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0079872>

¹⁶² <https://www.gov.uk/government/news/food-and-environment-research-agency-new-145m-investment>

¹⁶³ http://earthopensource.org/files/pdfs/Europes-pesticide-and-food-safety-regulators/Eu_pesticidefoodsafety.pdf

sound science' to the environmental risk assessment of agricultural biotechnologies". But Earth Open Source's investigation revealed much more about Moretti and many other regulators.

In 2012 Corporate Europe Observatory/Earth Open Source wrote a Report: Conflicts on the menu: A decade of industry influence at the European Food Safety Authority (EFSA).¹⁶⁴ Holland, N., Robinson, C., and Harbinson, R. (2012). Brussels, Belgium, Corporate Europe Observatory and Earth Open Source.

The Editors of the *Journal of Epidemiology and Community Health* (owned by the British Medical Journal) read the above Report and commissioned a paper based on the information. It was published online in 2013. Conflicts of interest at the European Food Safety Authority erode public confidence.¹⁶⁵ Claire Robinson, Nina Holland, David Leloup, Hans Muilerman.

"EFSA experts involved in assessing the risks of GM foods have attracted criticism. In 2010, 12 out of 21 experts on the GMO Panel...had conflicts of interest as defined by the Organisation for Economic Cooperation and Development (OECD.)"... "Chair of EFSA's Management Board Diána Bánáti had a longstanding relationship with the industry-funded ILSI. In May 2012 she had to resign from EFSA and re-joined ILSI as Executive Director. Suzy Renkens Scientific Coordinator of EFSA's GMO Panel was criticised by the European Ombudsman over her failure to deal with conflicts of interest. She left EFSA in 2008 and stepped straight into a job with Syngenta. "

Harry Kuiper was Chair of the GMO Panel from 2003 to 2012. He had been at the forefront of the criticism of Dr Arpad Pusztai's paper in 1998 on rats fed GM potatoes which was published in the *Lancet*.¹⁶⁶ *"He had been involved in the risk assessment of every GM food submitted to EFSA since the Agency was set up. Throughout his term of office he retained links with ILSI...Even the design of EFSA's GMO risk assessment standards was influenced by an ILSI Task Force headed by a Monsanto employee."*

International Life Sciences Institute (ILSI): Is it a private club for Corporations?

The membership of ILSI Europe consists of 56 (as of 12 Feb 2015) organisations.¹⁶⁷ This list represents Global Corporations (including the six Agrochemical Giants) with massive resources that are seeking to control the world's food supply. ILSI is an industry organisation based in Washington, DC, USA. It claims to be *"a non-profit, worldwide organization whose mission is to provide science that improves human health and well-being and safeguards the environment"* and allegedly has charity status.

The IUPAC (International Union of Pure & Applied Chemistry); Subcommittee on Crop Protection Chemistry.¹⁶⁸ There are currently 28 people on the IUPAC Subcommittee including Dr Caroline Harris and Dr Gijs Kleter from Wageningen University. Dr Kleter wrote papers with Harry Kuiper in 2002 and 2007 and is now Vice-Chairman of EFSA GMO Panel.

Dr Caroline Harris is also a member of the supposedly independent UK Advisory Committee on Pesticides (ACP). She is Corporate Vice-President of *Exponent Inc.*¹⁶⁹ She worked for 15 years for the UK Pesticides Safety Directorate (PSD) and will have known Dr Peter Campbell when he was Head of Ecotoxicology in the PSD. Both went through the revolving doors to high positions in Industry. Dr Harris went straight from PSD into *Exponent Inc.*

¹⁶⁴ <http://corporateeurope.org/efsa/2012/02/conflicts-menu>

¹⁶⁵ <http://jech.bmj.com/content/67/9/717>

¹⁶⁶ <http://download.thelancet.com/pdfs/journals/lancet/PIIS0140673605767088.pdf>

¹⁶⁷ <http://www.ilsa.org/Europe/Pages/currentmembers.aspx>

¹⁶⁸ http://www.iupac.org/home/about/members-and-committees/db/division-committee.html?tx_wfqbe_pi1%5bpublicid%5d=604

¹⁶⁹ *"Exponent, Inc., a research and scientific consultant firm with clients from industry (including crop protection) and government"* http://www.exponent.com/caroline_harris/

In 2013, in a commentary by Sue Davies, Chair of EFSA Management Board, she denied complaints about Conflicts of Interest¹⁷⁰

"I therefore read with interest, the latest report from Corporate Europe Observatory on alleged conflicts of interest at EFSA (with reference to the GMO Panel). The fact that EFSA makes its experts' Declarations of Interest publicly available online allows interested parties to scrutinise for themselves how the Authority selects its scientific experts. The Management Board is confident that the policy EFSA has in place to ensure independence in its scientific work is robust. The Board is also satisfied that EFSA is implementing its own rules effectively as they apply to the selection of experts and the assessment of Declarations of Interest."

Harry Kuiper, Chairman of the GMO Panel from its inception in 2003, finally steps down in 2012 after being accused of a close relationship with ILSI

Harry Kuiper left as Chairman of the GMO panel in 2012 because Corporate Europe Observatory, Christoph Then of Testbiotech, CRIIGEN and Earth Open Source had all complained about Conflicts of Interest in EFSA because of Kuiper's links with ILSI.

Rothamsted Research. Dr Jonathan Napier, the Programme Leader from Rothamsted Research, was present at the secret meeting with industry. In 1941 the herbicide 2,4-D was discovered in the UK (Rothamsted Research) and the US at the same time. It was commercialized in 1946 (US 1948) and is still on the list of herbicides registered in the UK and the US. In Australia in 2013 an urgent review was underway after a Four Corners investigation found elevated levels of dangerous dioxins in a generic version of 2,4-D, one of Australia's most widely used herbicides (imported from China). Dioxins are one of the most deadly chemical compounds in the world, but Australian authorities do not routinely test for them.¹⁷¹ GMOs are now being made to be resistant to glyphosate, glufosinate and 2,4-D, all very toxic herbicides.¹⁷² The US Environmental Protection Agency's (EPA) gave unconditional registration on 15/10/2014 of Dow Chemical's Enlist Duo herbicide, a new blend of 2,4-D and glyphosate intended for use on Dow's patented 2,4-D resistant (Enlist) genetically engineered corn and soybeans.¹⁷³

Current membership of the GMO panel: Has it improved since Harry Kuiper left?

Chairman: Prof Joe Perry: Registered conflicts of interest.¹⁷⁴ He retired as a Rothamsted employee in June 2006. Indeed, apart from his name and email address there was little to indicate that he had been there. He seems to have 'disappeared' to become 'Rothamsted's man in Europe.' From July 2006 he has been permanently employed on various GMO Committees, until he took over from Harry Kuiper in 2012 as Chairman of the GMO Panel.

Prof Perry states at the bottom of Page 2: *In terms of time, over 98% of my working time consists of advisory work as an expert on the GMO panel of EFSA, which is ongoing since 2006. For this I receive only expenses.*" Prof Perry has done at least four papers with colleagues from EFSA on GM crops without declaring his position on the GMO Panel.¹⁷⁵

In 2003 he was lead author in the Farm Scale evaluation (3 years only) of GM Herbicide-tolerant crops.¹⁷⁶ In 2012 he was lead author in a paper in the *Journal of Applied Ecology*¹⁷⁷ "Estimating the

¹⁷⁰ <http://www.efsa.europa.eu/en/press/news/131024a.htm>

¹⁷¹ <http://mobile.abc.net.au/news/2013-07-22/four-corners-dangerous-dioxins/4833848>

¹⁷² https://www.testbiotech.org/sites/default/files/Risks%20of%20herbicide%202_4-D_0.pdf

¹⁷³ http://sustainablepulse.com/2014/10/16/us-center-food-safety-slams-epa-approval-enlist-duo-herbicide/#.VOw-L_msWII

¹⁷⁴ <http://www.efsa.europa.eu/en/gmo/gmomembers.htm>

¹⁷⁵ <http://link.springer.com/search?facet-author=%22Joe+N.+Perry%22>

¹⁷⁶ <http://onlinelibrary.wiley.com/doi/10.1046/j.1365-2664.2003.00786.x/full>

¹⁷⁷ <http://onlinelibrary.wiley.com/doi/10.1111/j.1365-2664.2011.02083.x/pdf>

effects of Cry1F Bt-maize pollen on non-target Lepidoptera using a mathematical model of exposure.”

“A 14-parameter mathematical model integrating small- and large-scale exposure was used to estimate the larval mortality of hypothetical species with a range of sensitivities, and under a range of simulated mitigation measures consisting of non-Bt maize strips of different widths placed around the field edge” Synthesis and applications. Mitigation measures of risks of Bt-maize to sensitive larvae of non-target lepidopteran species can be effective, but depend on host-plant densities which are in turn affected by weed-management regimes.

In EFSA’s Scientific Opinion published 09/11/2012, Updating the risk assessment conclusions and risk management recommendations on the genetically modified insect resistant maize 1507 ¹⁷⁸

variations of Perry’s mathematical model have been referenced on four occasions. “Perry *et al.*, 2010, 2011, 2012 referred to in EFSA, 2011d), the EFSA GMO Panel concluded that: “*there is a risk to certain highly sensitive non-target lepidopteran species where high proportions of their populations are exposed over successive years to high levels of maize 1507 pollen deposited on their host-plants*” (EFSA, 2011d, 2012b).”

If you find the paper on mathematical modelling difficult to understand, then listen to Prof Perry explaining The Risks of GMOs to a Weekend Residential Conference of Christians in Science.¹⁷⁹ At the beginning of his recorded lecture¹⁸⁰ he says: “*I don’t know anything about the science of GMs.*” This becomes very clear as he struggles to explain it to a lay audience. If you fast forward to 20.27 min, he then tries to expound the risk to a non-target species of moth. He finally comes up with a recommended distance between a Bt crop and a theoretical Nature Reserve of 30 metres to mitigate the risks to a non-target unknown species of moth.

US populations of a ‘real’ lepidopteran, the migrant monarch butterfly, have declined by 90%: The results of mathematic modelling appear to bear no relationship to what happens in the field

In the last 20 years, the population of monarch butterflies in the eastern US has declined by 90 percent.¹⁸¹ With the introduction of genetically-modified crops like Roundup®-Ready corn and soy that are resistant to traditional herbicides, farmers have begun to spray more and more Roundup®—the Monsanto-made chemical—over wider and wider areas, resulting in the loss of milkweed, the only plant upon which they lay eggs and their larvae feed.

In February 2015 the US Center for Food Safety produced an 88-page Report: Monarchs in peril; Herbicide-Resistant Crops and the decline of Monarch Butterflies in North America ¹⁸² “*Unlike many other weed killers, once absorbed it (glyphosate) is translocated (moved internally) to root tissue, where it kills milkweed at the root and so prevents regeneration. The increasingly common practice of growing Roundup Ready crops continuously on the same fields means that milkweed is exposed to glyphosate every year, with no opportunity to recover. In 1999, common milkweed was found in half of corn and soybean fields, but only 8% of them a decade later.*”

First Vice-Chairman of the GMO Panel: Dr Gijs A. Kleter, Wageningen University. Dr Kleter is Harry Kuiper’s protégé; he is a member of the IUPAC Sub-Committee on Crop Protection Chemistry and is the lead author for a number of multi-author publications. Dr Caroline Harris has a 28-year history of working for industry. She has written 26 papers, eight of which are with Dr Kleter as first author. Some of the GMO papers have 16 authors.

¹⁷⁸ <http://www.efsa.europa.eu/en/efsajournal/doc/2933.pdf>

¹⁷⁹ <http://www.cis.org.uk/conferences/past-conferences/residential-2012/>

¹⁸⁰ http://www.cis.org.uk/upload/conferences/Residential2012/Joe_Perry.mp3

¹⁸¹ <http://www.newsweek.com/monarch-butterflies-have-declined-90-conservationists-seek-extra-protection-267094>

¹⁸² http://www.centerforfoodsafety.org/files/cfs-monarch-report_2-4-15_design_05341.pdf

Second Vice-Chairman of the GMO Panel: Prof Patrick du Jardin: Gembloux Agro-Bio Tech; Plant Biology Unit; University of Liège; Gembloux, Belgium.

In January 2012 Prof du Jardin was second author of a paper whose first author, Nancy Podevin an EFSA employee, found a hidden viral gene in GMO crops.¹⁸³ In fact, this paper isn't among Prof du Jardin's selected scientific publications in his Biography for EFSA. Is he anxious to avoid it being discussed? Or has he been threatened by industry? There are at least two independent scientists who have suggested that there are serious questions to be answered about human safety by those in Europe authorising GM.

Jonathan Latham, PhD, Editor of *Independent Science News* has written a Synopsis and he and Allison Wilson have published a pdf.¹⁸⁴

Synopsis: A scientific paper published in late 2012 shows that US and EU GMO regulators have for many years been inadvertently approving transgenic events containing an unsuspected viral gene. As a result, 54 different transgenic events commercialized internationally contain a substantial segment of the multifunctional Gene VI from Cauliflower Mosaic Virus (CaMV) within them. Among these are some of the most widely grown GMOs, including Roundup® Ready Soybean (40-3-2) and MON810 Maize. The oversight occurred because regulators failed to appreciate that Gene VI overlaps the commonly used CaMV 35S gene regulatory sequence.

The authors of the paper, working for the European Food Safety Authority, concluded that functions of Gene VI were potential sources of harmful consequences. They further concluded that, if expressed, the fragments of Gene VI are substantial enough for them to be functional (Podevin and du Jardin (2012) GM Crops and Food 3: 1-5).

This discovery has multiple ramifications for biotechnology. Foremost, there is the immediate question of GMO safety and whether the 54 events should be recalled, but secondly, the failure implicates regulators and the industry in a circle of mutual incompetence and complacency.

The discovery will also strengthen the argument for GMO labelling: if regulators and industry cannot protect the public then why should they not be allowed to protect themselves?

In Norway, on 24.01.2013 GenØk¹⁸⁵ published a similar assessment at the request of the Norwegian Directorate for Nature Management.¹⁸⁶

EFSA's statement on the membership of the Scientific Committee for Emerging Risks (2015)¹⁸⁷

"In view of the strategic role of the Scientific Committee, its members are prominent scientists with recognised scientific excellence, competences spreading across disciplines, seniority and prior experience with scientific bodies. The Committee's expertise encompasses all the scientific areas within EFSA's remit:

- *Human health risk assessment, food consumption and exposure assessment, environmental risk assessment, animal health risk assessment, toxicology, microbiology, human nutrition, epidemiology, animal health, animal welfare, human medicine, veterinary medicine, food hygiene, food technology, chemistry, biology, biochemistry, life sciences."*

¹⁸³ Possible consequences of the overlap between the CaMV 35S promoter regions in plant transformation vectors used and the viral gene VI in transgenic plants.

<http://www.tandfonline.com/doi/full/10.4161/gmcr.21406#.VOi3Cnxybcs>

¹⁸⁴ <http://www.independentsciencenews.org/commentaries/regulators-discover-a-hidden-viral-gene-in-commercial-gmo-crops/>

¹⁸⁵ GenØk – Centre for Biosafety is a non-commercial foundation located in the research environment at the University of Tromsø and Forskningsparken (the Science Park). GenØk's vision is safer use of biotechnologies.

¹⁸⁶ <http://genok.com/arkiv/723/>

¹⁸⁷ <http://www.efsa.europa.eu/en/scer/scmembers.htm>

The Chairman is Prof Anthony Richard Hardy. He states in 2015 that he is an ‘Individual Scientist’ and has spent 14 years on committees. Although he says he has been working at the University of York, his email address cannot be found on the website. In fact it transpires that he was working at the Central Science laboratory (CSL) at Sand Hutton, York.¹⁸⁸ The CSL is the UK's foremost public sector laboratory in the fields of agriculture, food and the environment and is an Executive Agency ‘responsible for the delivery of science in support of Government objectives’. He did not admit that he also worked for ADAS before that.¹⁸⁹ ADAS recommended pre-harvest spraying of glyphosate (to dry them) on cereal crops in 1980. Since 1965, the MAFF Pesticides Survey Group has surveyed the use of pesticides in major agricultural and horticultural crops every 4-5 years. One of Professor Hardy's publications: The impact of the commercial agricultural use of organophosphorus and carbamate pesticides on British wildlife¹⁹⁰ at a conference in Cambridge in 1984, the lead author said: “Herbicides and fungicides are the most widely used pesticides, but, from their intrinsic toxicity, insecticides have greater potential direct effects on non-target wildlife.” Monsanto has completely deceived them by declaring glyphosate to be harmless. The 1975-1979 quantity of herbicides was 11,145.4 tonnes (compared with 2,336.1 tonnes of fungicides and 1,606.8 tonnes total insecticides). Prof Hardy was also Chairman of the Scientific Panel at a meeting on Endocrine Disrupting Chemicals in Parma in 2013 when the group decided that they would delay identification of EDCs.¹⁹¹ Prof Hardy has been on the Environmental Panel of the Advisory Committee on Pesticides for 15 years.¹⁹² Members are responsible for providing advice to the ACP on issues related to the environmental fate and behaviour and eco-toxicological effects of pesticides.

Why do the current Chair of the EFSA Panel on Genetically Modified Organisms (GMO) which deals with genetically modified organisms and genetically modified food and feed,¹⁹³ the Scientific Committee and Emerging Risks (SCER)¹⁹⁴ and Contaminants in the Food Chain (CONTAM)¹⁹⁵ come from the UK?

Professor Joe Perry, Chairman GMO Panel formerly worked at Rothamsted Research.

Professor Anthony Richard Hardy, Chairman of SCER, formerly worked for the CSL and ADAS.

Dr Diane Benford, Chairman of CONTAM, currently works for the UK Food Standards Agency.

Prof Huw Jones is another member from Rothamsted Research on the GMO Panel.

Is it part of the plan with industry set up on 26/06/2012 to facilitate getting GM crops into Britain?

EFSA's Reasoned Opinion Panel increases MRLs at the request of industry (Monsanto in this case, to 100 times the previously authorised MRL)

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/kg¹⁹⁶ (i.e. 100 times: January 2012). EFSA had granted similarly elevated MRLs for glyphosate on wheat and GM soya.

Conflicts of interest of Anne Glover CSA to the European Parliament

¹⁸⁸ <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2679592/>

¹⁸⁹ <http://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=1038&context=vpc14>

¹⁹⁰ <http://nora.nerc.ac.uk/5980/1/13.pdf> page 75.

¹⁹¹ <http://www.efsa.europa.eu/en/topics/topic/eas.htm>

¹⁹² http://www.pesticides.gov.uk/guidance/industries/pesticides/advisory-groups/acp/acp-environmental-panel/?wbc_purpose=ba

¹⁹³ <http://www.efsa.europa.eu/en/gmo/gmomembers.htm>

¹⁹⁴ <http://www.efsa.europa.eu/en/scer/scmembers.htm>

¹⁹⁵ <http://www.efsa.europa.eu/en/contam/contammembers.htm>

¹⁹⁶ <http://www.efsa.europa.eu/en/efsajournal/pub/2550.htm>

Professor Glover, former Chief Scientific Advisor to President Barroso, in an interview with EurActiv¹⁹⁷ said: “There is no substantiated case of any adverse impact on human health, animal health or environmental health, so that’s pretty robust evidence, and I would be confident in saying that there is no more risk in eating GMO food than eating conventionally farmed food.” She said the precautionary principle no longer applies as a result. “The evidence with which I work is independent; the evidence with which I work does not change according to political philosophy. And that should give people a lot of confidence.” She is not independent. According to Glover’s declaration, as reported by Damerval,¹⁹⁸ “Professor Glover is a shareholder in a biotech company and set up the firm Remedios, which was named Scotland’s “Best New Biotechnology Company” for Biotech Scotland by its industry peers.¹⁹⁹ She will be a leading speaker at a conference in Africa to persuade them to grow GM crops. She sits on the board of Science Business, alongside representatives of Microsoft, Sanofi and BP; members include biotechnology companies.”

Glover said that discomfort around the subject of GM crops in the 1980s and 1990s was “a generation ago, we’ve moved on and the challenges are completely different.” Corinne Lepage MEP for France (and former French Minister of the Environment) says Anne Glover is wrong.²⁰⁰ “However, regarding the environmental impact of GMOs, the evidence is overwhelming and completely concrete. Not only is the dissemination of GMOs to non-GM plants proven, but the damage caused by regrowth elsewhere, which requires the use of ever more toxic pesticides, has already become a reality.” Corinne Lepage goes on to say: “Glover has as such taken on a heavy amount of personal responsibility, going so far as to say the precautionary principle is no longer applicable. If in the coming years, evidence on the toxicity of GMOs comes to light, European citizens would be entitled to ask her for an explanation.”

Science Media Centre: expert reaction to the re-publication of Séralini Study on Roundup-tolerant GM maize.²⁰¹ Prof Perry rejected it, but did not declare his interest as Chair of EFSA’s GMO Panel!

Professor Joe N. Perry, Visiting Professor of Biometry, University of Greenwich, said:

“This paper appears to be based on the same data as Seralini’s previous 2012 paper, with no real new information and only minor rephrasing and a few new references. Therefore, I doubt whether my conclusions would differ from those of the vast majority of independent members of the scientific community, who concluded in 2012 that there was insufficient evidence to justify the claims of CRIIGEN and Giles-Eric Seralini. However, I do welcome Seralini’s promise to publish his raw data and my hope is that all organisations involved in GM risk assessment will, wherever possible in the future, publish in full their raw data in the spirit of full transparency and openness.”

Declared interests

None declared

Non-declaration of interests over GMs in June 2014

Why did Professor Perry pretend that he was an independent member of the scientific community and fail to mention his position as Chairman of the EFSA GMO Panel? For the same reasons as Times Journalist, Matt Ridley wrote an article: Eat up your GM crops. They are good for you.²⁰² He said he was a farmer and did not declare an interest. However, he is not plain Matt Ridley, but the 5th Viscount Ridley, Chairman of Northern Rock 2004-2007, the first Bank to be bailed out by the

¹⁹⁷ <http://www.euractiv.com/innovation-enterprise/commission-science-supremo-endor-news-514072>

¹⁹⁸ Francois Damerval is Chief of Staff to Corinne Lepage, the French MEP.

¹⁹⁹ <http://foodvitalpublicservice.wordpress.com/2014/02/13/the-biotech-industry-retreats-from-europe-but-is-courting-africa/>

²⁰⁰ <http://www.euractiv.com/cap/gmos-anne-glover-wrong-analysis-514185>

²⁰¹ <http://www.sciencemediacentre.org/expert-reaction-to-republication-of-seralini-study-on-roundup-tolerant-gm-maize/>

²⁰² <http://www.thetimes.co.uk/tto/opinion/columnists/article4127014.ece>

Government. He is also the brother-in-law of Owen Paterson the previous Environment Secretary who was found to be having secret correspondence with Syngenta, and was pressing for GM.

Examples of EFSA GMO Panel ‘adopting’ GM without considering environmental consequences

*"The UK Competent Authority and Syngenta had applied for placing on the market of a GM, herbicide tolerant (glyphosate) maize GA21 for food and feed uses, import, processing and cultivation."*²⁰³ It was adopted by the EFSA on 16 December 2011. Although the EFSA GMO Panel had said that there were no effects on human or animal health or the environment in the Abstract, in the full document, they admitted to the problems of reduction in farmland biodiversity, selection of weed communities and selection of glyphosate-resistant weeds, and destruction of food webs and the ecological functions they provide. Nevertheless, EFSA adopted it, but covered itself by saying *"The magnitude of these potential adverse environmental effects will depend on a series of factors including the specific herbicide and cultivation management applied at farm level, the crop rotation...etc. and recommended "case-specific monitoring."*

EFSA GMO Panel adopted GM crops on the grounds that they were safe for human health and the environment

This is despite the many papers that show that super weeds are massively destructive to the environment in the US²⁰⁴ and that over a period of 30 years there has been uncontrolled spread and contamination globally by many Genetically-Engineered (GE) plants that are herbicide resistant.²⁰⁵

Conflicts of interest not declared: GMO Panel Chairman is joint author of a Review with EFSA of spread of feral GM herbicide-tolerant OSR: "concerns are not scientifically justified"²⁰⁶

This paper dismisses concerns of escape of GE organisms into the environment. It *"concludes that feral GM herbicide-tolerant oilseed rape in Europe should not be routinely managed, and certainly not in semi-natural habitats, as the benefits of such action would not outweigh the negative effects of management."*

Uncontrolled spread of GE crops: Testbiotech Report on the spread of GE Oil Seed Rape²⁰⁷

GE plants have been grown for 30 years and commercially for 20 years. This independent Report provides a global overview of the uncontrolled escape of GE oil seed rape (OSR) in various regions of the world (US, Canada, Japan, Australia, Switzerland and Germany). In Switzerland where no 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 plants²⁰⁸

This Report, also from Testbiotech (Germany) 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.

European Network of Scientists for Social and Environmental Responsibility ENSSER

²⁰³ <http://www.efsa.europa.eu/en/efsajournal/pub/2480.htm>

²⁰⁴ <http://www.enveurope.com/content/24/1/24>

²⁰⁵ http://www.testbiotech.org/sites/default/files/Testbiotech_Transgene_Escape.pdf

²⁰⁶ <http://nora.nerc.ac.uk/15307/1/N015307PP.pdf>

²⁰⁷ www.testbiotech.de/node/891

²⁰⁸ http://www.testbiotech.org/sites/default/files/Testbiotech_Transgene_Escape.pdf

“No scientific consensus on GMO safety” statement published in peer-reviewed journal²⁰⁹

A statement signed by over 300 scientists and legal experts to the effect that there is “No consensus” on the safety of genetically modified (GM) crops and foods has been published in a peer-reviewed open access journal, *Environmental Sciences Europe* in 2015. It now belongs to the body of open peer-reviewed scientific literature and stands as a citable publication.

Open Letter from Industry (2013) urges EU officials to abandon ‘the precautionary principle’

However, many pesticide lobbyists in Europe, in common with Prof Anne Glover, are calling for the ‘precautionary principle’ to be abandoned and be replaced by the ‘innovation principle’ where risk-taking is acceptable (when it is for the benefit of businesses). Twelve of the largest corporations in Europe (the majority of which are Agrochemical Corporations) submitted an Open Letter to the President of the European Commission, Mr Jose Manuel Barroso, Mr Herman Van Rompuy, President of the European Council and Mr Martin Schulz, President of the European Parliament urging them to adopt an **“Innovation Principle”** to be taken into full consideration during policy and legislative processes in order to *“stimulate economic recovery.”*²¹⁰

The European Commission, EFSA, WHO and UNEP delay the criteria for defining endocrine disruptors. Is it to protect the Agrochemical Industry and the herbicide glyphosate/Roundup®?

Delay since 1999 in identifying and banning endocrine disruptors in Europe

The Community strategy on endocrine disruptors is from 1999, but no real action has resulted from it. There appear to be many individuals and bodies fighting to delay the ban on agricultural pesticides that have been causing endocrine disruption in humans and animals for the last 30 or so years: low semen quality in men, genital malformations, adverse pregnancy outcomes and birth defects, neurobehavioural disorders related to thyroid function, increasing incidence of endocrine-related cancers (breast, endometrial, ovary, prostate, testicular and thyroid cancers), early breast development in girls and the prevalence of obesity and Type 2 diabetes.

European Commission was challenged about its continued registration of Roundup®

In 2011, a paper written by eight multinational experts, the authors challenged the European Commission about its continued registration of Roundup®. Roundup and Birth Defects: is the public being kept in the dark?²¹¹ *“The European Commission has previously ignored or dismissed many other findings from the independent scientific literature showing that Roundup® and glyphosate cause endocrine disruption, damage to DNA, reproductive and developmental toxicity, neurotoxicity, and cancer, as well as birth defects. Many of these effects are found at very low doses, comparable to levels of pesticide residues found in food and the environment.”...*

“This issue is of particular concern now that Monsanto and other producers of genetically modified seed are trying to get their glyphosate-tolerant crops approved for cultivation in Europe. If the EU Commission gives its approval, this will lead to a massive increase in the amount of glyphosate sprayed in the fields of EU member states, as has already happened in North and South America. Consequently, people’s exposure to glyphosate will increase.”

The review of glyphosate was due to take place in 2012. Soon after the Commission was notified of the latest research showing that glyphosate and Roundup® caused birth defects, it quietly passed a directive delaying the review of glyphosate and 38 other dangerous pesticides until 2015.

²⁰⁹ <http://www.enveurope.com/content/pdf/s12302-014-0034-1.pdf>

²¹⁰ <http://www.scienceindustries.ch/file/13682/erf-communication-innovation-principle.pdf>

²¹¹ <http://earthopensource.org/earth-open-source-reports/roundup-and-birth-defects-is-the-public-being-kept-in-the-dark/>

The EU Commissioner for Health, John Dalli, resigned on 12/10/2012 after an anti-fraud inquiry linked him to an attempt to influence tobacco legislation.²¹² He denied the allegation.

Independent scientists have shown that glyphosate is an endocrine disruptor

Gasnier, C. *et al*, Glyphosate-based herbicides are toxic and endocrine disruptors in human cell lines. *Toxicology* doi:10.1016/j.tox.2009.06.006²¹³

“All parameters were disrupted at sub-agricultural doses with all formulations within 24h. These effects were more dependent on the formulation than on the glyphosate concentration. First, we observed a human cell endocrine disruption from 0.5 ppm on the androgen receptor in MDA-MB453-kb2 cells for the most active formulation (R400), then from 2 ppm the transcriptional activities on both estrogen receptors were also inhibited on HepG2. Aromatase transcription and activity were disrupted from 10 ppm. Cytotoxic effects started at 10 ppm with Alamar Blue assay (the most sensitive), and DNA damages at 5 ppm. A real cell impact of glyphosate-based herbicides residues in food, feed or in the environment has thus to be considered, and their classifications as carcinogens/mutagens/reprotoxics is discussed.

Fiona Young *et al*, Endocrine disruption and cytotoxicity of glyphosate and Roundup in human JAR cells *in vitro*. *Integrative Pharmacology, Toxicology and Genotoxicology*²¹⁴

Conclusions *Glyphosate alone is less toxic than glyphosate in a Roundup® formulation; both glyphosate and Roundup® caused cell death which resulted in decreased progesterone levels in vitro, and endocrine disruption did not precede cytotoxicity. A 24h exposure to a concentration of Glyphosate (in Roundup®) similar to that recommended as an acceptable level for Australian drinking water caused significant cytotoxicity in vitro, which supports a call for in vivo studies to characterise the toxicity of Roundup®.*

Endocrine Disrupting Chemicals (EDC) – 2012 Commissioned by WHO and UNEP

An assessment of the State of Science of Endocrine Disruptors was prepared for the United Nations Environment Program and the World Health Organization by a group of approximately 50 expert scientists led by Professor Åke Bergman, University of Stockholm.²¹⁵

The authors outlined the current evidence of: 1) a high incidence, and increasing trends, of many endocrine-related disorders in humans; 2) observations of endocrine-related effects in wildlife populations; 3) identification of chemicals with endocrine disrupting properties linked to disease outcomes in laboratory studies.

“Endocrine-related disorders in humans are manifest by:

- *Increases in low semen quality in young men (up to 40%)*
- *Incidence of genital malformations has increased over time*
- *Adverse pregnancy outcomes and birth defects has increased in many countries*
- *Neurobehavioural disorders related to thyroid dysfunction has increased*
- *Endocrine-related cancers (breast, endometrial, ovary, prostate, testicular and thyroid cancers) have been increasing over the past 40 -50 years*
- *Earlier onset of breast development in young girls which leads to breast cancer*
- *The prevalence of obesity and type 2 diabetes is increasing. The WHO estimates that 1.5 billion adults worldwide are overweight or obese and that the number with type 2 diabetes increased from 153 million to 347 million between 1980 and 2008”*

The conclusion was: *“It is essential to evaluate associations between EDC exposures and health outcomes by further developing methods for which proof of concept is currently under development.”*

²¹² [http://europa.eu/rapid/press-release MEMO-12-788_en.htm](http://europa.eu/rapid/press-release_MEMO-12-788_en.htm)

²¹³ <http://www.ncbi.nlm.nih.gov/pubmed/19539684>

²¹⁴ <http://www.gmo-evidence.com/wp-content/uploads/2015/03/IPTG-1-104.pdf>

²¹⁵ http://unep.org/pdf/9789241505031_eng.pdf

An Editorial in the *Lancet*²¹⁶ concluded: “there is currently no widely agreed system for assessing the strength of associations between exposure to chemicals (including EDCs) and adverse health outcomes.”

Why didn't glyphosate even appear on the list of candidates for Endocrine Disrupting Chemicals? There is plenty of evidence from independent scientists. In addition, the evidence produced in the Report that atrazine was also an EDC was overwhelming; why was atrazine not named as one? The reason is that atrazine is still used extensively in many countries, including the US and Australia and Syngenta relentlessly pursues anyone who says it is harmful.²¹⁷ Although atrazine was banned in the EU in 2004, it was still used in Britain 4 years after it had been banned in Europe.²¹⁸ At that stage illegal levels of atrazine >0.1µg/l were found in more than 25% of groundwater monitoring sites in the UK.²¹⁹ The Environment Agency Groundwater Database had recorded a maximum concentration of atrazine of 13.04µg/l. That is 130 times the EU legal limit for groundwater (2004/248/EC).²²⁰

Was heavy contamination of groundwater with atrazine linked to a gastroschisis cluster in Kent?

In April 2012, The Daily Mail and Mail on Sunday revealed that nine babies born over 12 years in one street in Kent had the same major congenital anomaly, gastroschisis.²²¹ Gastroschisis is a major congenital defect in the abdominal wall, almost always to the right of the navel, through which the abdominal contents freely protrude. An investigation was carried out which reported on 10 July 2013.²²² The Public Health investigation did not find evidence of higher rates of gastroschisis than could be considered normal in the Waterdales Road area. Syngenta said: *“There is no proven link between atrazine and these defects. Atrazine does not cause developmental abnormalities.”*

Atrazine does appear to be linked with developmental abnormalities

However, gastroschisis had been reported in association with atrazine in the US in 2010.²²³ The investigators discovered this report, but for some reason had dismissed it. In May 2013, 3 months before the Report was published a Case-control study of maternal residential atrazine exposure and male genital malformations in their offspring was undertaken in Texas.²²⁴

Extracts from Abstract: “Exposure to endocrine disrupting chemicals has been associated with risk for male genital malformations. However, residential prenatal exposure to atrazine, an endocrine disrupting pesticide, has not been evaluated...Previous literature from animal and epidemiological studies supports our findings. Our results provide further evidence of a suspected teratogenic role of atrazine.”

Just after the Report was published (in December 2013) The incidence of abdominal wall defects is related to surface water atrazine and nitrate in Indiana²²⁵ and a further paper confirmed the link; Maternal residential atrazine exposure and gastroschisis by maternal age.²²⁶

²¹⁶ [http://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(13\)60564-4/fulltext](http://www.thelancet.com/journals/lancet/article/PIIS0140-6736(13)60564-4/fulltext)

²¹⁷ www.newyorker.com/reporting/2014/02/10/140210fa_fact_aviv

²¹⁸ <https://secure.fera.defra.gov.uk/pusstats/index.cfm> Atrazine

²¹⁹ http://www.pesticides.gov.uk/Resources/CRD/Migrated-Resources/Documents/P/Pesticides_Forum_Oct_2008_WFD.pdf

²²⁰ <http://nora.nerc.ac.uk/14557/1/OR11013.pdf> A British Geological Survey Report (2011): ‘Emerging contaminants in groundwater’ which has remained unpublished.

²²¹ <http://www.dailymail.co.uk/news/article-2142106/One-street-Nine-babies-born-horrific-rare-deformity-And-troubling-question--mothers-poisoned-weedkiller.html>

²²² Report into possible cluster of Gastroschisis in Northfleet: Meradin Peachey, Director of Public Health, Kent County Council (Formerly Director of Public Health Kent and Medway) 10 July 2013

²²³ <http://www.ncbi.nlm.nih.gov/pubmed/20207240> Agricultural-related chemical exposures, season of conception, and risk of gastroschisis in Washington State.

²²⁴ <http://www.ncbi.nlm.nih.gov/pubmed/23494929>

²²⁵ <http://www.ncbi.nlm.nih.gov/pubmed/17560200>

²²⁶ <http://www.ncbi.nlm.nih.gov/pubmed/23184502>

Glyphosate Studies in Emerging Contaminants: degradation product four times the parent and may be problematic

According to the British Geological Survey (BGS) Report on Emerging Contaminants in Groundwater (2011) page 35: *“Glyphosate is now the most widely used herbicide in the world, with dramatic increases in agricultural use since the introduction of glyphosate resistant crops. Microbial degradation produces aminomethyl phosphonic acid (AMPA) (Kolpin et al., 2000) and it has been anticipated that AMPA may be problematic. The high water solubility of both the parent and the metabolite has meant that their analysis has been difficult. Although AMPA has a DT50 of about 151 days and is therefore persistent it also has a relatively high Koc of 8087 and would not be classified as vulnerable to leaching by the simple method described above. Similarly for parent compounds which have non-agricultural applications, there will be routes to groundwater which would not be identified, such as routes which do not pass through the soil zone. Kolpin (2006) showed AMPA to be detected in wastewater-impacted surface waters about four times as frequently as the parent.”*

Endocrine Disrupting Chemicals: Owen Paterson former UK Environment Minister in a secret letter to Syngenta about neonicotinoids (April 2013) in which EDCs were mentioned²²⁷

“You raise the point that this issue is one of several that impact on the availability of pesticides in agriculture. We are well aware of this point and you will know that amongst other things, the UK has been arguing hard for a proportionate approach to regulating Endocrine Disrupting Chemicals.”

A letter had been sent to Prof Anne Glover Chief Scientific Adviser to the European President Barroso to protest about the Draft Regulation on endocrine active chemicals 18/06/2013²²⁸

Soon after Owen Paterson’s comments to Syngenta about *“the UK arguing hard about a proportionate approach to regulating EDCs”* more lobbyists weigh in with delaying tactics. Seventy three individuals writing under the umbrella of the Royal Society of Chemistry complained that the European Commission was ignoring scientific principles in the setting of a regulatory framework for endocrine disrupting chemicals. A significant number of signatories had conflicts of interest. Twenty were/or had been, on EFSA Panels, Diane Benford is Chairman of EFSA CONTAMIN and she and David Gott work for the UK Food Standards Authority (FSA) and Alan Boobis served on EFSA, and is current Vice-President of ILSI Europe and a member of the Board of Trustees of ILSI.

EFSA Committee works on Endocrine Disruptors, March 2013, but continues to procrastinate

Prof Anthony Hardy Chairman of EFSA Scientific Committee and Emerging Risks made a video statement at the end.²²⁹ The Committee agreed unanimously with the WHO definition (2012). *Scientific knowledge of this area is still growing and, therefore, understanding of what is an endocrine active substance continues to be the subject of scientific debate...EFSA’s experts concluded that available or soon to be available internationally agreed testing methods can identify interference of chemical substances with the most important endocrine pathways in mammals and fish known to be sensitive to endocrine disruption. EFSA concluded that a risk assessment approach which considers both the likelihood of exposure together with potential adverse effects of endocrine active substances makes best use of available information to regulate their use.*

New attack on EU policy regarding endocrine disruption: Health DG SANCO prepares an escape route for pesticides 20/05/2014

²²⁷ <http://www.guardian.co.uk/environment/interactive/2013/apr/29/environment-secretary-letter-syngenta-insecticide-ban>

²²⁸ <http://www.rsc.org/suppdata/tx/c3/c3tx90013d/c3tx90013d.pdf>

²²⁹ <http://www.efsa.europa.eu/en/topics/topic/eas.htm>

Pesticides Action Network Europe puts out a Press Release:²³⁰ *“Commission health service DG SANCO is on its way to develop an escape route for endocrine disrupting pesticides that will be banned in future. This is done behind closed doors with EU member states and Food Authority EFSA. Sweden fiercely protested against this initiative because they feel the pesticide Regulation is misused and doesn't allow for a general derogation. Food Authority EFSA is also active in the SANCO working group, lobbying to revise the legislation on endocrines back to traditional risk assessment and encouraging SANCO to use an escape route.”*

“It also appears from documents released by Commission to PAN Europe (on the PAN website [2]) that EFSA has an active role in the SANCO working group. A representative of the EFSA Scientific Committee writes to Barroso's advisors that they keep on opposing the pesticide legislation and aim to return to traditional risk assessment. This is in line with pesticide industry's efforts. The representative also complains about the pesticide legislation having no "control route" or "socio-economic route" to save endocrine disrupting pesticides from a ban and keep them on the market. The person suggests that the 'negligible exposure' option will be a good option to fill this gap.”

Sweden decides to sue the EU Commission for delay on identifying hormone disrupting chemicals

On May 22 2014, Agence France Presse: Sweden said it would sue the European Commission over a delay in identifying harmful chemicals in everyday products, which it blamed on chemical industry lobbying.²³¹

“This delay is due to the European chemical lobby, which put pressure again on different Commissioners,” Swedish Environment Minister Lena Ek told AFP.

The Commission was due to set criteria by December 2013 to identify endocrine disrupting chemicals (EDCs) in thousands of products — including disinfectants, pesticides and toiletries — which have been linked to cancers, birth defects and development disorders in children. *“Hormone disrupters are becoming a huge problem,”* said Ek, explaining that Sweden and Denmark had written to the Commission to demand action but to little avail.

“In some places in Sweden we see double sexed fish. We have scientific reports on how this affects fertility of young boys and girls, and other serious effects.”

Commission delays further by consulting the public on criteria to identify Endocrine Disruptors²³²

The Commissioners launch a consultation on 29 September 2014 with closing date 15 January 2015.

Protecting public health from Endocrine Disrupting Chemicals: the EDC-Free Campaign

Letter to the new EU Commissioner, President Juncker, in response to the launch of a public consultation: 20 November 2014:²³³

We write as 19 health and environmental organisations, doc tors, scientists and concerned professionals across Europe to urge you to ensure that the Commission takes clear action to minimize our multiple daily exposures to harmful hormone-disrupting chemicals. This would ensure that the EU creates lasting benefits for productivity and health budgets by reversing chronic diseases related to endocrine disrupting chemicals (EDCs).

The EU pesticides regulation required the European Commission to come up with EDC criteria by the end of 2013. EU Council joins EDC court case²³⁴

²³⁰ <http://www.pan-europe.info/News/PR/140520.html>

²³¹ <http://www.capitalfm.co.ke/business/2014/05/sweden-to-sue-eu-for-delay-on-hormone-disrupting-chemicals/>

²³² http://europa.eu/rapid/press-release_IP-14-1057_en.htm?locale=en

²³³ http://www.env-health.org/IMG/pdf/letter_edc_free_coalition_to_president_juncker.pdf

²³⁴ <http://env-health.org/news/latest-news/article/eu-council-joints-edc-court-case>

The EU Council of Ministers is now supporting a court case against the EU Commission regarding the delay in delivering the criteria for EDCs. The European Parliament is also set to join. The lawsuit was started by Sweden last year.

Letter to Vytenis Andriukaitis Commissioner for Health & Safety from 11 MEPs: economic impacts on industry are taking precedence over human health and the environment²³⁵

On 20/01/2015 *“Endocrine disrupting chemicals cause adverse health effects in an intact organism. This is particularly relevant during pregnancy, where it can affect developmental processes of the foetus in an irreversible manner. Cancer, infertility, diabetes, obesity and behavioural disorders have all been linked to exposure to endocrine disrupters”...”* Back in 2009, the European Parliament and the Council adopted the Regulation (EC) No 2009/1107 on plant protection products. It included so called cut-off criteria for endocrine disrupters: active substances in pesticides should no longer be authorized if they were endocrine disrupters, unless there was a serious danger which cannot be contained by other available means, including non-chemical methods... firstly, concrete interim criteria for endocrine disrupters were adopted, and secondly, the legislator gave a mandate to the Commission to come up with permanent criteria by the end of 2013.

“Moreover, it makes the decision about what should be the appropriate definition for endocrine disrupters depend on the socio-economic impact on the industry and the substitutability of these substances when used as pesticides and biocides. However, such economic considerations are totally irrelevant when it comes to the question of what is an endocrine disruptor.”

Member states and European Parliament join Swedish court case on EDC criteria²³⁶

Wednesday, 28 January 2015

Health and Environment Alliance reports: *“The European Council has voted to join Sweden's legal case against the European Commission over its delays in proposing criteria for endocrine disrupting chemicals (EDCs). Also the European Parliament is supporting the case.”*

Estimating Burden and Disease Costs of Exposure to Endocrine-Disrupting Chemicals in the European Union²³⁷

Rapidly increasing evidence has documented that endocrine-disrupting chemicals (EDCs) contribute substantially to disease and disability.

Expert panels achieved consensus at least for probable (>20%) EDC causation for IQ loss and associated intellectual disability, autism, attention-deficit hyperactivity disorder, childhood obesity, adult obesity, adult diabetes, cryptorchidism, male infertility, and mortality associated with reduced testosterone.

Conclusions

EDC exposures in the EU are likely to contribute substantially to disease and dysfunction across the life course with costs in the hundreds of billions of Euros per year. These estimates represent only those EDCs with the highest probability of causation; a broader analysis would have produced greater estimates of burden of disease and costs.”

Other ways in which UK Ministers failed to adhere to the precautionary principle but preferred to support corporations and the economy

Mad Cow Disease 1980s-2000; how reassurances by Ministers undermined precaution

²³⁵ <http://www.michele-rivasi.eu/au-parlement/lettre-au-commissaire-europeen-a-la-sante-sur-les-criteres-de-definition-des-perturbateurs-endocriniens/>

²³⁶ <http://env-health.org/news/latest-news/article/eu-council-joints-edc-court-case>

²³⁷ <http://dx.doi.org/10.1210/jc.2014-4324>

From the European Environment Agency Report 2001: The Precautionary Principle: Late lessons from Early Warnings.²³⁸

The first case of Bovine Spongiform Encephalopathy (BSE) in cows was officially recognised in November 1986. *“The pathological characteristics of the new cattle disease closely resembled scrapie, a transmissible spongiform encephalopathy (TSE) that is endemic in the UK sheep population...Policy-makers were repeatedly told, both by the scientific experts on whom they claimed to rely, and by the wider scientific community, that it was impossible to be certain that consuming meat, milk and dairy products from animals with BSE posed no risk.*

Ministers and senior policymakers insisted otherwise in public. On 7 June 1990, for example, the Agriculture Minister told the House of Commons that there was ‘... clear scientific evidence that British beef is perfectly safe’ (Hansard, 1990, column 906).”

By 1995 there was evidence that BSE may cause Creutzfeldt-Jakob disease (CJD) in young people. In 1996 experiments start to see whether cattle fed on rations deliberately infected with scrapie would get BSE. The BSE crisis (1996) occurred after a new variant of CJD emerged in the United Kingdom, and consuming BSE contaminated food was considered the most probable cause.

*“Most of the deceit about BSE was perpetrated by the UK government, and only a few other governments also employed deception to cloud its risks.”*²³⁹

Mark Purdey, a farmer who died from a brain tumour aged 52, had another theory.²⁴⁰ *“His life changed one day in 1984 when a Ministry of Agriculture (MAFF, as it then was) official told him he had to comply with a warble fly eradication order and treat his herd of Jersey cows with an organophosphate (OP) pesticide. Purdey refused, arguing that the suggested dose was far too high and in any case his natural treatment for warble fly was perfectly effective. The battle lines with the agricultural bureaucracy were drawn; before they had a chance to prosecute him, Purdey took MAFF to court and shook administrative complacency by winning his case. Purdey also noted that no home-reared cattle on fully converted organic farms had contracted BSE. He believed that the onset of the disease was associated with the over-use of chemicals on the cattle.”* Samsel and Seneff, in their paper: Glyphosate, pathways to modern diseases III: Manganese, neurological diseases, and associated pathologies, agree that there may be link between glyphosate and prion diseases such as BSE.²⁴¹ Monsanto scientists were recommending pre-harvest glyphosate use in 1980. By 1985 ADAS was promoting the use of glyphosate on grassland; they declared it to be good practice to graze the grass or preserve it as hay or silage after treatment.²⁴² The compulsory treatment of warble fly with OP Pesticides was 1978-1981. The cattle that contracted BSE were born 1986-1988. Humans started to develop new variant CJD in 1995. It could have been a combination of chemicals.

Successive British Governments supported the pesticides industry against the public. Defra denied a link between organophosphate use as a sheep dip in the 1980s and neurological problems in farmers: OPs are still registered by Defra. Aviation Authorities and Physicians denied Pilots/Crew and Gulf War Veterans symptoms connected with OP exposure.

In 2012, Mackenzie Ross, S.J. *et al.* Reviewed 14 studies (looking at 1600 participants) and showed a relationship between low level exposure to organophosphates (OPs) and impaired neuro-behavioural functioning. OPs target memory, information processing speed, the ability to plan and

²³⁸ http://www.eea.europa.eu/publications/environmental_issue_report_2001_22 Chapter 15 page 384

Patrick van Zwanenberg and Erik Millstone. ‘Mad cow disease’ 1980s–2000: how reassurances undermined precaution. The Precautionary Principle. Late lessons from early warnings.

²³⁹ Altered Genes, Twisted Truth Steven M Druker. How the Venture to Genetically Engineer Our Food Has Subverted Science, Corrupted Government and Systematically Deceived the Public. Page 385

²⁴⁰ <http://www.theguardian.com/news/2006/nov/21/guardianobituaries.bse>

²⁴¹ http://www.surgicalneurologyint.com/temp/SurgNeuroInt6145-4381109_121011.pdf

²⁴² Stride CD, Edwards RV, Seddon JC. Sward destruction by application of glyphosate before cutting or grazing; 1985. pp. 771–778. British Crop Protection Conference – Weeds 7B–6.

have abstract thoughts.²⁴³ These findings have implications for working practice and for other occupational groups exposed to organophosphates such as Aviation Workers and Gulf War Veterans. When this paper was discussed on Radio 4 Farming Today in 2012, Defra denied a connection and said it continued to authorise the OP insecticides chlorpyrifos and dimethoate.

Chemical Concern published 23/02/2015: Incriminating sheep dip poisoning: Health & Safety Executive Report (1990) – officially destroyed –but has now been revealed²⁴⁴

Farmer Tom Rigby, Sheep Dip Sufferers' Support Group, requested a FoI. He said: "*The information I want is HSE advice given to the government minister just before he decided to abandon compulsory dipping and the science behind and date of a government order that Ministry of Agriculture, Fisheries and Food inspectors must not go within 14ft of a sheep dip.*" The HSE responded to the FoI request by telling Mr Rigby: "*The information you requested is no longer held by the Health & Safety Executive, having been destroyed in accordance with HSE's corporate retention policy*". A 'well-wisher' sent a copy to Mr Rigby.

Re-approval of aspartame by CoT and the FSA

The UK is the RMS for aspartame. In December 2013 CoT re-approved Monsanto's chemical sweetener aspartame.²⁴⁵ As a result of unpublished British research (Hull University), CoT had decided there is no need to ban or control the sale or consumption of the sweetener, aspartame, to protect the health of the public. On December 10th 2013 EFSA completed "*full risk assessment on aspartame and concludes it is safe at current levels of exposure.*"²⁴⁶

Prof Erik Millstone of Sussex University had written on multiple occasions to EFSA about the toxicity of aspartame, beginning in June 2011. He wrote a 67-page document on 20th February 2013²⁴⁷ in response to the EFSA draft report: "*The draft report on the safety of aspartame, issued by the European Food Safety Authority's ANS panel on 8 January 2013, is deeply flawed.*" He detailed the history of aspartame in the US and the fact that for 16 years it was considered too toxic to be licenced because it was neurotoxic and carcinogenic. On page 15 is an indictment²⁴⁸ against GD Searle, the original owners, before Monsanto bought the company.

Ralph D Walton MD, Professor at the Center for Behavioural Medicine, North Eastern Ohio University College of Medicine has published a review of studies.²⁴⁹ He did research for 60 minutes on scientific peer-reviewed studies and funding; 92 per cent of the studies showed problems with aspartame, but Walton said if you remove 6 studies because the FDA had something to do with it and their controversy, and 1 pro-industry summary, one hundred per cent of independent scientific peer-reviewed studies showed the toxicity of aspartame. Aspartame is an addictive, excitoneurotoxic, carcinogenic, genetically engineered drug and adjuvant that damages the mitochondria and interacts with drugs and vaccines.

²⁴³ <http://oro.open.ac.uk/36218/1/Mackenzie%20Ross%20et%20al%202012a.pdf>

²⁴⁴ <https://politicalcleanup.wordpress.com/2015/02/23/secret-state-14-incriminating-sheep-dip-poisoning-hse-report-officially-destroyed-has-now-been-revealed/>

²⁴⁵ <http://www.food.gov.uk/news-updates/news/2013/5894/aspartame>

²⁴⁶ <http://www.efsa.europa.eu/en/press/news/131210.htm>

²⁴⁷ <https://www.sussex.ac.uk/webteam/gateway/file.php?name=em-letter-to-efsa-on-aspartame-20feb2013.pdf&site=25>

²⁴⁸ In his role as FDA Chief Counsel, Richard Merrill was therefore satisfied that the FDA had gathered sufficient evidence for G D Searle to be indicted for: "...violations of the federal Food, Drugs and Cosmetics Act...and the False Reports to the Government Act...and for concealing material facts and making false statements in reports of animal studies conducted to establish the safety of...the food additive Aspartame."

²⁴⁹ <http://ww.dorway.com/peerrev.html>

UK denies that exposure to environmental chemicals damages foetal brains

UK Committee on Carcinogenicity of Chemicals in Foods, Consumer Products and the Environment (COC) assesses and gives advice on carcinogenic risk to humans.

Meeting July 2006²⁵⁰ ITEM 5: Age related differences in susceptibility to carcinogenesis (CC/06/8)

Members did not support the conclusion that most of the lifetime risk associated with genotoxic carcinogens arose from pre-adult exposure.

ITEM 8: 'Tissue Organ Field Theory' of carcinogenesis (CC/06/10)

58. A paper by Newby and Howard (2006) claimed that it is feasible that chemical environmental contaminants could be major factors in cancer aetiology... Overall, Members agreed that the paper reported interesting ideas but that there were insufficient data to support the hypothesis.

UK refused to acknowledge that exposure to pesticides during pregnancy is harmful

Defra Minister, the Defra Chief Scientist and Dave Bench Chief Scientist CRD gave evidence at the Environmental Audit Committee Inquiry Insects and Insecticides. When questioned by Dr Matthew Offord MP (Q359) about removing amateur applications of pesticides, they all agreed that it wasn't necessary to ban domestic use.²⁵¹ Could it be because Bayer had just re-launched their garden products campaign?²⁵² When the Royal College of Obstetricians and Gynaecologists published their advice to avoid chemical exposure during pregnancy,²⁵³ there was a barrage of press coverage quoting those who dismissed the advice as ridiculous. This included the CMO at the Department of Health²⁵⁴ and Tracey Brown from Sense About Science.²⁵⁵

The Faroes Statement: Human Health Effects of Developmental Exposure to Chemicals in Our Environment²⁵⁶

In 2007 twenty five experts in environmental health from eleven countries (including from the UK) met on the Faroes and contributed to this statement. *"The periods of embryonic, foetal and infant development are remarkably susceptible to environmental hazards. Toxic exposures to chemical pollutants during these windows of increased susceptibility can cause disease and disability in infants, children and across the entire span of human life. Among the effects of toxic exposures recognized in the past have been spontaneous abortion, congenital malformations, lowered*

²⁵⁰

<http://webarchive.nationalarchives.gov.uk/20131103234051/http://www.iacoc.org.uk/meetings/Minutes13.07.2006.htm>

²⁵¹ **Lord de Mauley:** The products for use in gardens have very clear instructions for use. No product is approved for garden use if the correct use would require either training or protective clothing. The levels of toxicity for products that are approved for garden use are generally considerably lower than for professional use. So we think that the level of control is appropriate.

<http://www.publications.parliament.uk/pa/cm201213/cmselect/cmenvaud/668/668.pdf>

²⁵² <http://www.gardenforum.co.uk/tradeforum/peoplenews/?artid=2382>

²⁵³ <http://www.rcog.org.uk/womens-health/clinical-guidance/chemical-exposures-during-pregnancy-scientific-impact-paper-37>

²⁵⁴ <http://www.theguardian.com/lifeandstyle/2013/jun/07/pregnancy-advice-royal-college-health-chief>

²⁵⁵ In 2009 this registered Charity, Sense About Science, published a document to educate the general public called "Making sense of GM". Eight of the 28 main authors were members of the John Innes Centre. Three were FRS and another two Fellows' contributions were acknowledged. The author of the introduction was Prof Jonathan Jones FRS (The Sainsbury Laboratory, John Innes Centre). Once again Prof Jones failed to declare his links with Monsanto: [In a statement to the Observer (18/07/2010), Prof Jones insisted: *"It is not true to suggest I have attempted to hide my role as co-founder and science advisory board member of Mendel Biotechnology, which has contracts with Monsanto, Bayer and BP. The information that I am co-founder... of Mendel has been in the public domain on the Mendel website for at least 10 years."*]

²⁵⁶ <http://www.ncbi.nlm.nih.gov/pubmed/18226057>

birthweight and other adverse effects. These outcomes may be readily apparent. However, even subtle changes caused by chemical exposures during early development may lead to important functional deficits and increased risks of disease later in life. The timing of exposure during early life has therefore become a crucial factor to be considered in toxicological assessments.”

Chemical brain drain: insidious and pervasive²⁵⁷

“Today, one out of every six children suffers from some form of neurodevelopmental abnormality. The causes are mostly unknown. Some environmental chemicals are known to cause brain damage and many are suspected of it, but few have been tested for such effects. The brain’s development is uniquely sensitive to toxic chemicals and even small deficits may negatively impact our academic achievements, economic success, risk of delinquency, and quality of life. Chemicals such as mercury, polychlorinated biphenyls (PCBs) arsenic and certain pesticides pose an insidious threat to the next generation’s brains. When chemicals in the environment affect development of the child’s brain, he or she is at risk for mental retardation, cerebral palsy, autism, ADHD, and a range of learning disabilities and other deficits that will remain for a lifetime. The chemical brain drain can be halted to protect the next generation’s brain power. First, we need to control all of the 200 industrial chemicals that have already been proven to affect brain functions in adults, as their effects on the developing brain are likely even worse. We must also demand routine testing for brain toxicity, stricter regulation of emissions of brain-toxic chemicals, and required disclosure on the part of industries who unleash these hazardous chemicals into products and the environment. Decisions can still be made to protect the brains of future generations – and some decisions appear to be seriously overdue. This site aims at furthering information on chemical risks to brain development and ways to protect the next generation against chemical brain drain.”

ONLY ONE CHANCE How Environmental Pollution Impairs Brain Development - and How to Protect the Brains of the Next Generation by Professor Philippe Grandjean: Oxford University Press.²⁵⁸

Review by THEO COLBORN, PHD, President, TEDX (the Endocrine Disruptor Exchange)

“This book is a huge gift to humankind from an eminent scientist. Grandjean tells the truth about how we have been ruining the brain power of each new generation and asks if there are still enough intelligent people in the world today to reverse the problem. I cannot rid myself of the idea that too many brains have been drained and society is beyond the point of no return. We must learn from the follies and scandals that Grandjean reveals and stop the chemical brain drain before it is too late.”

Violent Behavior: A Solution in Plain Sight

Why is there an increasing incidence in unsociable behaviour, disorder, aggression, gun crime, and brutality in the UK? This paper by Sylvia Onusic, PhD, CNS, LDN, seeks reasons for the increase in violent behaviour in America, especially among teenagers. She identifies malnutrition, vitamin and micronutrient deficiency as potent causes of aberrant behaviour, crime and the spectrum of autistic diseases. She says: *“Some children have been corrected by a proper diet free of junk food.”*²⁵⁹ These are precisely the effects of exposure to glyphosate.

²⁵⁷ <http://braindrains.dk/www.chemicalbraindrains.info>

²⁵⁸ <http://www.env-health.org/news/latest-news/article/book-review-only-one-chance-by>

²⁵⁹ <http://www.westonaprice.org/environmental-toxins/violent-behavior-a-solution-in-plain-sight/pdf>

The Verdict of the Permanent Peoples' Tribunal (PPT) concerning the six indicted corporations (BASF, BAYER, DOW CHEMICAL, DUPONT, MONSANTO, SYNGENTA)²⁶⁰

Findings in the Final Report from the PPT (Page 28)

The PPT Session was held in Bangalore, India between December 3 and 6, 2011. In accordance with the program (Attachment 2), witnesses, technical witnesses and survivors made oral presentation of specific cases and submitted supporting documents. As established in its Statute, the Tribunal notified the legal representatives of the transnational corporations headquartered in Germany (Bayer and BASF), Switzerland (Syngenta) and the United States (Monsanto, DuPont, Dow Chemical Company).

The Tribunal makes the following declaration of responsibility for the six indicted Trans National Corporations and three Governments in particular and further also declares the responsibilities of all States, international organizations, UN Specialist Agencies, all other institutions of global governance.

CONCERNING THE INDICTED SIX CORPORATIONS (BASF, BAYER, DOW CHEMICAL, DUPONT, MONSANTO, SYNGENTA)

- The Tribunal finds on all evidence presented before it, the six TNCs *prima facie* responsible for gross, widespread and systematic violations of the right to health and life, economic, social and cultural rights, as well as of civil and political rights, and women and children's rights.
- The Tribunal further finds that their systematic acts of corporate governance have caused avoidable catastrophic risks, increasing the prospects of extinction of biodiversity, including species whose continued existence is necessary for reproduction of human life.

Rosemary Mason MB ChB FRCA 26/03/2015

"Corporate totalitarianism ... rules through dispensability and corruption. It treats communities, people, countries, ecosystems and species as disposable and dispensable."

²⁶⁰ http://www.internazionaleleliobasso.it/wp-content/uploads/2012/03/37.-English-version_TPP_Bangalore3Dec2011.pdf