Soybean DAS-44406-6

Organisation: The European GMO-free Citizens (De Gentechvrije Burgers)
City: Lelystad
Country: The Netherlands
Type: Others...
Public: Yes

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a. Assessment:
Others

GMOs - The European Commission is tabling science fiction legislation • 20 March 2017 • Food and agriculture, Democracy and human rights, Health and consumers, Environment and animal welfare, GMOs - The European Commission is tabling science-fiction legislation and intends to approve 20 varieties of maize for human and animal consumption ... the only problem is that some of them still have to be invented! 20 varieties of maize, all in one application. The European Commission is proposing the authorisation of new genetically modified maize varieties for animal and human consumption so that they can be imported into Europe - where they are at least not allowed to be cultivated. Strangely, it is not just one maize variety that is involved, but more than 20. They include a genetically modified maize from Syngenta which has five genetically modified characteristics (primarily tolerance to the herbicides glyphosate and glufosinate and resistance to the corn borer), subcombinations of which are possible. This means that one single authorisation would allow 20 different maize varieties to be imported and used in food and feed. The Commission wants to import untested 'ghost' GM plants. It is the stuff of nightmares that EFSA (the European Food Safety Authority) has only assessed a few of these combinations for safety, and that most of them have not even been created yet. So the plants don't exist yet, but they are nonetheless to be authorised. Even with EFSA, this very 'original' evaluation procedure has raised questions. The EFSA scientific opinion includes an interesting minority opinion of one of the GMO panel members: 'No specific data regarding any of those 20 sub-combinations have been provided by the Applicant, who also did not give a satisfactory rationale explaining the reasons why those data are missing and/or why he would consider that they are not necessary for the risk assessment.' The same minority opinion also criticises the controversial 'weight of evidence approach', which overstates the importance of the industry's non-peer-reviewed studies in the evaluation process (see our article on this issue). EU Parliament and Member State experts issue opinions. The Standing Committee on Plants, Animals, Food and Feed, made up of experts from the 28 Member States, was not able to reach any conclusion on the Commission's draft on 27 January 2017 (a recurring problem concerning GMOs). The text will now be submitted to an appeal committee on 27 March. In the absence of an opinion from this appeal committee, the matter will be referred back to the Commission, which may very well approve this highly controversial and unconventional authorisation. Several Members of the European Parliament have already tabled an objection. On 21 March, the Environment Committee will vote on this, followed by the full Parliament. And although the European Commission is not legally obliged to accept the opinion of Parliament, its

credibility would receive a huge blow if it did not do so. The first step, however, is to persuade the Member States in the appeal committee that this authorisation would be madness, twenty-fold. http://bartstaes.be/nl-BE/artikel/persbericht/ggos-de-europese-commissie-maakt-science-fiction-wetgeving/26731 Glyfosaat | ECHA report still leaves a lot of questions unanswered • 15 March 2017 • Food and agriculture Health and consumers Environment and animal welfare

The European Chemicals Agency (ECHA) has just published its report on the harmfulness of glyphosate. It considers that the substance is not carcinogenic. ‘That ECHA has today taken the same decision as EFSA means that there is still a considerable need for transparency. Only if independent scientists obtain access to the studies used will the doubts about the harmfulness of glyphosate be eliminated once and for all’ - these are the words of Bart Staes, a Green Party MEP.

ECHA has reiterated what EFSA has already stated. What is striking is that the position of both is at odds with the findings of the World Health Organisation’s International Agency for Research on Cancer (IARC), which considers that the herbicide is ‘probably carcinogenic’.

The Greens/EFA in the European Parliament have already been campaigning for some time against glyphosate, because it poses a threat in a number of ways to the health of people, animals, plants and the environment. Today's ECHA report comes exactly one year after four MEPs, including Bart Staes, filed an official request with EFSA for access to the documents on which the EFSA findings are based. It is still unclear exactly what the industry examined, and the Greens want to have the tests repeated, or at least checked, by independent scientists. Up to now, however, EFSA has responded only partially, and in the studies that have been made available, many passages have been redacted.

Staes: ‘There are various reasons why the use of glyphosate is at odds with the protection of our health and sustainable agricultural practices. It doesn't just target the weeds that we want to get rid off but also kills more or less everything in the soil (bacteria, fungi, algae). The damage to plants and animals is real, and biodiversity is under pressure. Moreover, we are starting to see the effects of over-use of glyphosate: super-resistant weeds are emerging apace in North America and Spain and it is difficult to eradicate them. The possibility of even stronger pesticides being used creates a downward spiral which it will be difficult to stop.’

Staes: ‘And if that wasn't enough, there are so many alternatives available that it is senseless to continue to take the risks associated with glyphosate. We will continue to insist that there are other ways of farming which are just as productive but cause less damage to the environment.’ http://www.bartstaes.be/nl-BE/artikel/persbericht/glyfosaat-advies-van-echa-laat-nog-steeds-veel-vragen-open/26725. New report shows glyphosate producers are ‘buying science’. European and US regulators used industry-sponsored reviews with fundamental flaws in their evaluations that found glyphosate is not carcinogenic. Monsanto and other glyphosate manufacturers appear to have distorted scientific evidence on the public health impacts of glyphosate in order to keep the controversial substance on the market, according to a new report released today by GLOBAL 2000 (Friends of the Earth Austria member of PAN Europe) with the support of Avaaz, BUND, Campact, CEO, GMWatch, Pesticide Action Network (PAN) Europe, PAN Germany, and Umweltinstitut München.

Between 2012 and 2016, the companies sponsored a series of review articles published in scientific journals, all of which conclude that glyphosate and its commercial formulations are

not harmful to health. The new report, “Buying Science”, shows that these industry-sponsored reviews of glyphosate’s carcinogenicity and genotoxicity (ability to damage DNA) contain fundamental scientific flaws, spanning from apparently calculated omissions and the introduction of irrelevant data to the violation of OECD guidance for the evaluation of rodent cancer studies. The reviews also consistently assign greater weight to unpublished industry studies than to studies that were peer-reviewed and published in scientific journals.

Despite these major defects, regulatory authorities that conclude that glyphosate is not carcinogenic have frequently referred to the arguments provided in these industry-sponsored review articles on glyphosate. Germany’s Federal Institute for Risk Assessment (BfR), the European Food Safety Authority (EFSA), and the US Environmental Protection Agency (EPA) have all drawn on such review articles.

“Glyphosate producers have used every trick in the book to enable regulatory authorities around the world to play down the alarming health effects of glyphosate. The fact that the agencies accepted their 'assistance' is nothing less than scandalous,” said Helmut Burtscher, one of the study’s authors.

In contrast, the World Health Organisation’s (WHO) cancer research agency (IARC) refused to consider the unpublished industry studies summarised in industry-sponsored reviews in its assessment of glyphosate, stating that the data presented therein were insufficient and important details were lacking. IARC generally does not accept unpublished scientific evidence.

Co-author of the report, GMWatch editor Claire Robinson, said: “The quality of the arguments in these industry-sponsored reviews, often published in journals which are themselves compromised by conflicts of interest, is shockingly bad. Regulatory bodies have repeatedly contradicted themselves and the scientific evidence in their attempts to use the reviews to exonerate glyphosate from suspicion of carcinogenicity.”

The organisations presenting the report also support the European Citizens’ Initiative (ECI) to ban glyphosate and protect people and the environment from toxic pesticides.

As part of its stated objectives, the Stop Glyphosate ECI demands that the European Commission “ensures that the scientific evaluation of pesticides for EU regulatory approval is based only on published studies, which are commissioned by competent public authorities using industry money, instead of directly by the pesticide industry.”

“Decisions on the future of glyphosate should be guided by IARC’s independent review of the evidence,” Burtscher said.

The authors of the Buying Science report, Helmut Burtscher, Peter Clausing and Claire Robinson, are available for interviews about the report and the European Citizens’ Initiative.

The report can be downloaded here:
https://www.global2000.at/sites/global/files/Glyphosate_and_cancer_Buying_science_EN_0.pdf

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_____ Website: http://www.gmwatch.org Profiles: http://www.powerbase.info/index.php/GM_Watch:_Portal Twitter: http://twitter.com/GMWatch Facebook: http://www.facebook.com/pages/GMWatch/276951472985?ref

http://us6.campaign-archive2.com/?u=29cbc7e6c21e0a8fd2a82aeb8&id=35d1f2edab Nummer 2

EU to restrict herbicide glufosinate Comment Favorites Forward Print Category: Crop Protection Products Tags: EU , restrict , herbicide , glufosinate The European Commission has announced the restrictions for the use of the herbicide glufosinate, which will be effective from Nov 13, 2013.

The decision is based on the additional information provided by the notifier, the Commission considered that the further confirmatory information required had not been provided and that a high risk for mammals and non- target arthropods could not be excluded except by imposing further restrictions.

The active ingredient will only be authorised for band or spot application at rates not exceeding 750 g ai/ha (treated surface) per application, with a maximum of two applications per year.

EU member states must amend or withdraw existing product authorizations in accordance with Regulation (EC) No 1107/2009 by Nov 13, 2013 .They may set a grace period of up to one year for use of existing stocks.New approvals should include the application of drift-reducing nozzles and spray shields, together with relevant labelling.

Glufosinate obtained EU approval for use in apple orchards in 2007. Source: EUR-Lex http://news.agropages.com/News/NewsDetail---9598.htm

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3. Environmental risk assessment

A letter from the late Mrs Eijsten. From 2003!

Subject: Directive 2001/18/EC

I have before me your letter of 10 September 2002 to the President of the House of Representatives [of the Dutch Parliament], ref. IZ/IC/2002.1638, subject: Council of

Ministers of Agriculture and Fisheries of 23/24 September in Brussels. a. Although somewhat late, I would take the liberty nonetheless of responding to item 7 in that letter, concerning GM food and feed, in particular to the statement: 'Compulsory monitoring by authorisation holders of unforeseen effects of GMOs on human health and the environment following market introduction is now being extended to include GM foods and feed'; my question to you is this: how can you talk about 'unforeseen effects' of GMOs? GMOs are modified so as to be resistant to pesticides. The problem with the pesticides that are to be used is that their formulation is kept secret on the orders of the industry. Some 'inerts' are known, such as the antifreeze propanediol/10 % (which causes dermatitis), alkyl ether sulphate/AES/30 % (which has cardiovascular effects: vasoconstriction/vasodilation, depending on the dose), and ethylene glycol (less than 1 %) ... The effects of these 'inerts' are not widely publicised but they exist nonetheless, to the extent that a dermatologist wrote to tell me that he had (could have) no expert reports on the effect of the herbicide Finale SL14 (also known as Basta, Liberty) regarding the explosion in the number of eczema cases. Dermatologists have to turn their patients away, telling them: 'We can't tell you what is causing your eczema'! On top of that, commercial tests to identify eczema are FAULTY - THROUGHOUT THE WORLD. Vaseline prevents propanediol penetrating the skin, thus blocking the 'metabolic pathway'; no effects are then found. In addition, propanediol is sometimes contaminated with formaldehyde - this varies from batch to batch and it is recommended that each batch be checked! It is also known that when herbicides are applied, they are absorbed by the plants that are resistant to them; they are then reconstituted in the gut of livestock and end up in the blood, tissue and glands (milk), causing damaging effects in the food chain. This is why propanediol (an inert found in Finale, Basta, Liberty), for example, was banned absolutely in the German Food Act (*Lebensmittelgesetz*) (Ullmann 1980). This was not revoked in the following edition of Ullmann (1993). In an article in 'A Review of Results' on the EC-sponsored Research on Safety of Genetically Modified Organisms', entitled 'New methodologies for assessing the potential of UNINTENDED EFFECTS in genetically modified crops', H.P.J.M. Noteborn writes: 'It is recognised that no adequate and effective animal models to identify and trace the sources of potential unintended effects are currently available' (page 128). I received this book from Brussels two days ago, so it is recent. This casts all the fine words in Regulation 2001/18/EC into doubt, and underlines the need for further research. Many of the so-called 'unforeseen effects' would be perfectly foreseeable if there was no obligation of secrecy. Last year, I took legal action against the Dutch *College voor de toelating van gewasbeschermingsmiddelen en biociden (CTB)* [Board for the Authorisation of Plant Protection Products and Biocides], with a view to having all substances in the formulation and their effects included in the *Bestrijdingsmiddelenwet* [Pesticides Act], not just the active substance and its metabolites. Unfortunately my case was deemed inadmissible because Hoechst claimed that eczema as a result of propanediol in Finale was not a personal problem but a PUBLIC issue!!! (Affecting some 20 % to 30 % of the population). It was suggested to me that there had been no spraying with Finale in the street where I live - so I am supposed to just stay at home!!! Such insolence! So those unforeseen effects, referred to by Mr Noteborn, mean nothing. Until research produces some more convincing findings, consumers can have no faith in safe food. b. After reading the following point, '[...] proposed, in which the assessment of both environmental and food and feed safety aspects by the European Food Safety Authority is crucial' - part of replies to a questionnaire by the European Food Safety Authority - my question is the following: does this European Food Safety Authority have the same code of conduct as the national food authority? c. The next point: '[...] proposed, [...] and the involvement of the various Member States has been considerably reduced', about which you expressly write: 'I will speak in favour', for me raises the question: do you really understand that your standpoint means considerably reducing the involvement of the

Netherlands as well? If your position is to considerably reduce the interests of the Dutch public and Dutch farmers, it is reprehensible. Consumer confidence will be seriously damaged if they are not allowed a voice! Regulation 2001/18/EC (amendments) does still state that consumers should not be irritated. I'm sorry, but your attitude is a stab in the back not only for your own supporters but also for the Dutch public; you are sidelining yourself. Is it your responsibility as minister to stifle the lawful contribution of the public? A death-sentence for consumer confidence. The public is already misled far too often! The 'ownership' of consumers is the decisive factor. We are all consumers: industry also has to survive on that basis. But then consumers have to have all the information on the risks or, better still, 'dangers': including the best possible information on the substances used in the cultivation of our food. - especially if consumers ask for it. Once again: the secrecy obligation disadvantages consumers and their health. The CTB is aware of the formulations of pesticides and must therefore also be aware of their harmful effects. No way are they 'unforeseen'. Where is the investigation report on the subject? In view of the above, I would ask you to devote special attention to amendment 71: non-equivalence should be stated on the label. This can be done immediately, for example if any attempt is made to import maize gluten from abroad. Maize gluten is a waste product which can cause deficiency disorders.

I look forward to your reply.

Yours sincerely,

L. Eijsten

http://www.gentechvrij.nl/rvs0311.html

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4. Conclusions and recommendations

The European GMO-free Citizens don't want GM crops. Not in the fields and not on our plates. We want organic food. www.gentechvrij.nl

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Organisation: The European GMO-free Citizens (De Gentechvrije Burgers)
City: Den Haag
Country: The Netherlands
Type: Others...
Public: Yes

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a. Assessment:
5. Others

I fully support the statements by Miep Bos, spokesperson for De Gentechvrije Burgers, who has previously also sent you observations on the herbicide-tolerant, genetically modified soybean DAS-44406-6. All observations signed by Miep Bos, spokesperson for De Gentechvrije Burgers, on behalf of Wieteke van Dort. Lelystad. www.gentechvrij.nl

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Organisation: The European GMO-free Citizens (De Gentechvrije Burgers)
City: Lelystad
Country: The Netherlands
Type: Others...
Public: Yes

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a. Assessment:
Others

Follow-up to our previous objections.

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5. Others

Press release from Bart Staes

While the European Commission approves a major agro-chemical merger, the European Parliament votes against the authorisation of new GMOs. 5 April 2017 Food and agriculture, Climate and energy, Democracy and human rights, Health and consumers, Environment and animal welfare, Monetary affairs and trade, Europe in the world. A clear majority of the European Parliament today (1) voted for a resolution tabled by the Greens objecting to the authorisation of a whole series of GMOs. Bart Staes, Green MEP, who was behind the resolution, is happy: ‘This was the sixth vote in just over a year where a majority in the European Parliament spoke out against the use of GMOs in agriculture and in the food chain. Most experts in the Member States, and the general public in Europe, are opposed. If the European Commission still has the slightest understanding of democracy, they cannot authorise these GMOs.’ On 27 March, there was also a majority vote against the European Commission's proposal to authorise three GM maize varieties for cultivation in Europe, in an appeal committee comprising national experts (Standing Committee on Plants, Animals, Food and Feed) (2). No fewer than 16 Member States voted against, with only six in favour. Staes: ‘These most recent votes on GMOs on 27 March in the appeal committee and today in the European Parliament are important, because authorisation would mean permission being given for the cultivation of new GM crops in Europe for the first time in 18 years (3).’ Three GM maize varieties were on the table: Syngenta’s Bt11 and Dupont’s 1507 were up for authorisation for the first time, while Monsanto’s MON810 was seeking re-authorisation. Staes: ‘There is clear and consistent opposition in the European Parliament to new GMOs, a

subject about which much of the public in Europe is particularly sceptical (4). The European Commission's most recent proposal is to authorise no fewer than 20 different GM varieties, the safety of some of which has not yet even been tested. That is contrary to current European policy.' The vote today coincides with the approval by the European Commission of a take-over by ChemChina of the agro-chemical company Syngenta. Staes: 'A merger between these two multinationals in a sector which is already very concentrated is very bad news for farmers, the environment and food safety. If further concentration of the market and of power in the agricultural sector is to be avoided, the European Commission has no choice but to reject the merger that has been announced between Bayer and Monsanto.'

(1) 426 MEPs today voted for the resolution, with 230 against and 38 abstentions. (2) The European Commission's proposals for authorisation concern three maize varieties for cultivation, 21 maize varieties for use in food or feed (import), and one cotton variety.
(3) Except for the genetically modified Amflora potato, which did not last very long.
(4) According to a 2010 Eurobarometer, 61 % of the public in Europe tends towards a rejection of GMOs in farming and in food.

Organisation: The European GMO-free Citizens (De Gentechvrije Burgers)
City: Den Haag
Country: The Netherlands
Type: Others...
Public: Yes

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a. Assessment:
Others

Follow-up to our previous objections. Signed by Miep Bos on behalf of Wieteke van Dort.

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5. Others

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Most experts in the Member States, and the general public in Europe, are opposed. If the European Commission still has the slightest understanding of democracy, they cannot authorise these GMOs.' On 27 March, there was also a majority vote against the European Commission's proposal to authorise three GM maize varieties for cultivation in Europe, in an appeal committee comprising national experts (Standing Committee on Plants, Animals, Food and Feed) (2). No fewer than 16 Member States voted against, with only six in favour. Staes: 'These most recent votes on GMOs on 27 March in the appeal committee and today in the European Parliament are important, because authorisation would mean permission being given for the cultivation of new GM crops in Europe for the first time in 18 years (3).' Three GM maize varieties were on the table: Syngenta's Bt11 and Dupont's 1507 were up for authorisation for the first time, while Monsanto's MON810 was seeking re-authorisation. Staes: 'There is clear and consistent opposition in the European Parliament to new GMOs, a subject about which much of the public in Europe is particularly sceptical (4). The European Commission's most recent proposal is to authorise no fewer than 20 different GM varieties, the safety of some of which has not yet even been tested. That is contrary to current European policy.' The vote today coincides with the approval by the European Commission of a take-over by ChemChina of the agro-chemical company Syngenta. Staes: 'A merger between these two multinationals in a sector which is already very concentrated is very bad news for farmers, the environment and food safety. If further concentration of the market and of power in the agricultural sector is to be avoided, the European Commission has no choice but to reject the merger that has been announced between Bayer and Monsanto.'

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Organisation: Testbiotech
City: Munich
Country: Germany
Type: Non Profit Organisation
Public: Yes

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a. Assessment:
Molecular characterisation

The expression of the additional enzymes was only measured under field conditions in the US. It is unclear to which extent specific environmental conditions can influence the overall concentration of the toxins in the plants. The plants should have been subjected to a much broader range of environmental conditions to obtain reliable data on gene expression and functional genetic stability. Environmental stress can also cause unexpected patterns of expression in the newly introduced DNA (see Trtikova et al., 2015).

Further, all parts of the plants should be taken into account for risk assessment. Expression data have to be considered as one of the starting points in the risk assessment of the plants, so the assessment of the data cannot be reduced to those parts of the plants entering the food chain.

References:

Trtikova, M., Wikmark, O.G., Zemp, N., Widmer, A., Hilbeck, A. (2015) Transgene expression and Bt protein content in transgenic Bt maize (MON810) under optimal and stressful environmental conditions, PLoS ONE 10(4): e0123011. http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0123011

Comparative analysis (for compositional analysis and agronomic traits and GM phenotype)

Field trials for the comparative and agronomic assessment of soybean DAS-44406-6 were carried out in the United States at 10 sites in 2010 and at one site in 2012. No field trials were conducted in other soybean producing regions such as Argentina and Brazil.

Regarding agronomic traits, significant differences were found in pod count, seed count and (reduced) yield.

Regarding composition, following differences were found:

• DAS-44406-6/untreated 27 significantly different endpoints, five endpoints under equivalence category III or IV.

• DAS-44406-6/2,4-D 25 significantly different endpoints, four endpoints under equivalence category III or IV.

• DAS-44406-6/glyphosate 22 significantly different endpoints, two endpoints under equivalence category III or IV.

• DAS-44406-6/glufosinate 22 significantly different endpoints, three endpoints under equivalence category III or IV.

• DAS-44406-6/2,4-D+glyphosate+glufosinate 23 significantly different endpoints, two endpoints under equivalence category III or IV

Significant differences were found in: NDF, total dietary fiber, ash, carbohydrates, protein and moisture, copper copper, potassium, selenium and zinc, aspartic acid, cystine, isoleucine, leucine, lysine, tryptophan and tyrosine, tryptophan and tyrosine, palmitic (16:0), oleic (18:1), linoleic (18:2), and linolenic (18:3), arachidic (20:0), eicosenoic (20:1) and behenic (20:0) fatty acids, thiamine, riboflavin, folic acid, ascorbic acid, alpha tocopherol, gamma tocopherol and total tocopherol, raffinose, total daidzein equivalents and total genistein equivalents.

EFSA´s own guidance states that non-equivalence is more likely than equivalence for all significant findings that fall under equivalence category III or IV. Therefore, the genetically engineered soybean has to be considered to be different from its isogenic comparator in regard to several compounds. These findings are relevant and deserve more detailed investigations regardless of whether or not the specific compound raises safety concerns.

Given this wide range of biologically relevant differences, it is not acceptable that EFSA failed to require further studies e.g.

• Omics studies (proteomics, transcriptomics, metabolomics) to assist the compositional analysis and the assessment of the phenotypical changes. • Investigations of changes in content of miRNA which can be taken up at from the gut and render biological effects across border of life domains. It should be noted that EFSA´s ans- wer to questions from experts from Member States (EFSA 2017) are not in line with latest findings on uptake and biological effects of miRNA. There are several more recent studies supporting the findings of Zhang et al (2012). • Exposing the plants to a wide range of defined biotic or abiotic stressors to assess the true range of possible changes in the plants´ composition • Including more varieties inheriting the trait to investigate how the gene constructs interact with the genetic background of the plants. • Subchronic and chronic feeding trials with the whole plants to assess potential health effects. It should be noted that the 90-day feeding study provided by the company should have been rejected due to methodological weaknesses (see below).

EFSA does not address the fact that the overall number of significant results indicates the occurrence of unintended effects due to genetic modification, which would require more in depth investigation.

Further, effects on the immune system were completely ignored in the assessment of potential health impacts due to increased levels of lectins.

Based on the available data, no final conclusions can be drawn on the safety of the plants.

References:

EFSA (2017) Application EFSA-GMO-NL-2012-106 by Dow AgroSciences LLC, Comments and opinions submitted by Member States during the three-month consultation period, Register of Questions, http://registerofquestions.efsa.europa.eu/roqFrontend/ListOfQuestionsNoLogin?0&panel=ALL

Zhang, L., Hou, D., Chen, X., Li, D., Zhu, L., Zhang, Y., Li, J., Bian, Z., Liang, X., Cai, X., Yin, Y., Wang, C., Zhang, T., Zhu, D., Zhang, D., Xu, J., Chen, Qu., Ba, Y., Liu, J., Wang, Q., Chen, J., Wang, J., Wang, M., Zhang, Q., Zhang, J., Zen, K., Zhang, C.Y. (2011) Exogenous plant MIR168a specifically targets mammalian LDLRAP1: evidence of cross-kingdom regulation by microRNA. Cell Research, 22(1): 107-126.

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b. Food Safety Assessment:
Toxicology

The applicant conducted acute toxicity studies, a feeding study on chickens, as well as three 28-day studies to confirm the safety of soybean DAS-44406-6. Further, a subchronic 90-day study was conducted. Two of the three 28-day studies were rejected by EFSA due to methodological flaws.

In the third 28-day study on mice, changes in blood parameters and other significant changes were found. Only a small number of animals were examined.

The 90-day study revealed several significant findings which were sex-related: • Total white blood cell (WBC) and reticulocyte counts were slightly lower and statistically identified in males given soybean DAS-44406-6 as compared to those in the isoline non-transgenic controls. • With females, soybean event DAS-44406-6 produced a statistically significant higher mean red blood cell (RBC) count, haemoglobin concentration and haematocrits compared to those in the isoline non-transgenic controls.

EFSA considered these findings to be "not toxicologically relevant."

The study displays various weaknesses. For example, only one dose level was tested. Therefore, an assessment in regard to a possible dose-dependency of effects is not possible on the basis of a single test group.

Furthermore, according to EFSA, the study is not in line with the EFSA guidelines (EFSA, 2011): • Functional testing was not performed; • Animals were not housed individually; • Only one dose level was used in the study; • Power analysis was not performed.

It is particularly relevant that the soybeans used in the diet were not sprayed with the complementary herbicides.

Implementation Regulation (503/2013) requests a 90-day subchronic study as part of the risk assessment for all applications filed later than 2014. Taking this regulation into consideration, it is obvious that a full 90-day feeding study should have been requested since many biologically relevant differences were found between the event and its comparator, including compounds such as lectins. Further, soybeans sprayed with the complementary herbicides should have been included in the diet. In addition, multigenerational studies should have been performed to assess the impact on the reproductive system.

In general, EFSA risk assessment suffers from the fact that residues from spraying with the complementary herbicide are considered to be outside the remit of the GMO panel. However, conclusions cannot be drawn on the safety of the imported products without detailed assessment of these residues. Due to the specific agricultural practices that go along with the cultivation of these herbicide resistant plants, there are, for example, specific patterns of applications, exposure, occurrence of specific metabolites and emergence of combinatorial effects that require special attention. Herbicide-resistant plants are meant to survive the application of the complementary herbicide while most other plants will die after short time. Thus, for example, residues of glufosinate and 2,4-D, its metabolites and additives to the formulated product might accumulate and interact in the plants. As the publication by Kleter et al. (2011) shows, using herbicides to spray genetically engineered herbicide-resistant plants does indeed lead to patterns of residues and exposure that need to be assessed in detail.

While it is true that Pesticide Regulations 396/2005 and 1107/2009 are relevant in this context, in practice, they are not sufficient to generate the data needed to assess the residues from spraying with complementary herbicides. Furthermore, according to a reasoned legal opinion drawn up by Kraemer (2012), residues from spraying with complementary herbicides do indeed have to be taken into account in the risk assessment of genetically engineered plants from a regulatory point of view.

There is a clear gap in the safety assessment of the genetically engineered soybeans that cannot be filled by adjustments to the MRLs applicable under the Pesticide Regulation. Consequently, the impact of residues from spraying must be assessed before the soybeans can be declared safe. The failure to do so poses real safety risks to humans, animals and the environment generally.

In conclusion, GMO risk assessment cannot be allowed to avoid its obligation to make sure that the applicant provides all the data needed to assess all derivative soybean products in all relevant health aspects.

There are good reasons for carrying out detailed assessments of the residues from spraying with the complementary herbicides:

• From scientific literature (not acknowledged by EFSA) it is known that metabolisation in crops tolerant to 2,4-D may lead to the production of the compound 2,4-DCP (2,4-Dichlorophenol). According to a review by Lurquin (2016), 2,4-DCP may cause negative metabolic and genotoxic effects, and, like 2,4-D, is listed as "a possible carcinogen based on inadequate evidence in humans and limited evidence in experimental animals" by IARC. • A new study has recently linked 2,4-D with Non-Hodgkin Lymphoma (Smith et al., 2017). • Some of the complementary herbicides for use on the DAS-68416-4 soybean will be phased out in Europe e.g. glufosinate, fluazifop and diclofop-Methyl. • Combinatorial effects are likely to arise from interaction of residues from the mixed spraying of e.g. glyphosate, glufosinate and 2,4-D. • Endocrine effects were found when young rats were exposed to soy milk in combination with glyphosate (Nardi et al, 2016).

In any case, both the EU pesticide regulation and the GMO regulation require a high level of protection for health and the environment. Thus, in regard to herbicide-resistant plants, specific assessment of residues from spraying with complementary herbicides must be considered to be a prerequisite for granting authorisation. In addition, cumulative effects have to be investigated if a plant contains or produces other compounds of potential toxicity.

As a result, the toxicological assessment carried out by EFSA is not acceptable.

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Smith, A. M., Smith, M. T., La Merrill, M. A., Liaw, J., & Steinmaus, C. (2017) 2, 4-Dichlorophenoxyacetic Acid (2, 4-D) and Risk of Non-Hodgkin Lymphoma: A Meta-analysis Accounting for Exposure Levels. Annals of Epidemiology. http://www.sciencedirect.com/science/article/pii/S1047279717302466

Allergenicity

There are several relevant issues regarding allergenicity and the immune system that were left aside in EFSA risk assessment: • No non-IGE-mediated immune reactions were assessed although these effects must be considered relevant (Mills et al., 2013). This is especially relevant in this case since higher levels of lectins are present in comparison with the isogenic plants. • The assessment did not take into account the risk for more vulnerable groups of the population such as infants (EFSA, 2010). • The number of blood samples from patients with a known allergenicity to soybeans is much too small (10 samples) to draw any conclusions. • An analysis published by EFSA experts and other scientists recently found that, in general, open questions remain regarding the allergenicity assessment of genetically engineered plants, especially in the case of engineered soybeans (Selb et al., 2017).

Overall, the assessment is insufficient to exclude impacts on the immune system.

References:

EFSA (2010) Scientific Opinion on the assessment of allergenicity of GM plants and microorganisms and derived food and feed. EFSA Journal 2010; 8(7):1700, 168 pp.

Mills, E.N.C., Marsh, J.T., Boyle, R., Hoffmann-Sommergruber, K, DuPont, D., Bartra, J., Bakalis, S., McLaughlin, J., Shewry, P.R. (2013) Literature review: 'non-IgE-mediated immune adverse reactions to foods', EFSA supporting publication 2013:EN-527.

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4. Conclusions and recommendations

The risk assessment by EFSA is not acceptable in its present form. It does not identify knowledge gaps and uncertainties and fails to assess toxicity, impact on immune system and the reproductive system. The monitoring plan has to be rejected because it will not make essential data available.

5. Others

Monitoring should be case specific. Exact data on the exposure to the soybean should be made available. Possible health impacts must be monitored in detail. Controls regarding residues from spraying with glyphosate, glufosinate and 2,4-D have to be established. Accumulated effects that might stem from mixtures with other genetically engineered plants have to be taken into account in the monitoring plan.