Mr. Mlungisi Lulu Johnson
Chair: Portfolio Committee on Agriculture
e-mail: mjohnson@parliament.gov.za

19 October 2012

Re: Petition on "Agent Orange Maize"

Dear Honourable Mr Johnson

On the 6th of August 2012 the African Centre for Biosafety (ACB), supported by the Honourable Cheryllyn Dudley of the ACDP, submitted a petition to the National Assembly. In our petition we called for the reversal of a decision by the Department of Agriculture, Forestry and Fisheries to permit the import of a new variety of genetically modified (GM) maize that is resistant to the chemical 2,4-D. We have been advised by the Clerk of Papers that this petition has been forwarded to your Portfolio Committee for consideration.

We hereby request an update on when your Committee will hear our petition. We feel that there is an urgent need for high level debate on genetically modified organisms in South Africa for the following reasons:

- We are the only country in the world that has allowed our staple food to be modified. On the 2nd August 2012 a French research team published a paper in the peer-reviewed journal called Food and Chemical Toxicology that alerted the scientific community and government regulators to the need for more rigorous research into the safety of eating GM foods. This paper has caused a storm of controversy and has highlighted the paucity of research on which governmental decisions have been based.
- Research carried out by the South African Biodiversity Institute (SANBI) has recommended a review of risk assessment procedures in South Africa to encompass the most current science and highlighted that regulators and researchers are battling to keep up with the fast pace GM developments and approvals. The same study reported incidences of pest resistance occurring with GM maize in South Africa.
- The variety of GM maize that we have sought your intervention on is resistant to an herbicide called 2,4-D. It has been developed in response to the failure of glyphosate-resistant crops and the development of "superweeds" in the United States.

With so many different problems presenting themselves in regard to this technology, and with a stated lack of State capacity to monitor GMOs in South Africa, it is becoming urgent for our leadership to hear voices other than those of industry on the matter. This is especially so as at least 77% of our maize production is GM and consumers have no choice but to eat it.

Our original petition to the National Assembly is attached herewith. We look forward to your positive response.

Yours sincerely

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The National Assembly
Parliament of South Africa
Parliament Street
Cape Town

6 August 2012

To the National Assembly

Petition requesting a ban on the import for food, feed and processing of Dow Chemical's GM maize variety DAS-40278-9, and for a full enquiry into the decision-making process around GMO permits in South Africa.

This petition is submitted by the African Centre for Biosafety, and the undersigned organisations health care professionals and individuals.

The ACB has a respected record of evidence-based work in contributing to the GMO decision-making process; and protecting our genetic diversity, traditional knowledge and seed sovereignty that is built upon the values of equal access to and use of resources and support for the growing Agroecological farming movement.

The ACB and the undersigned organisations, professionals and individuals respectfully request that the Parliament:

(a) Overturn the decision of the Executive Council: GMO Act to approve the importation for food, feed and processing, of Dow Chemical's GM maize variety, DAS-40278-9;
(b) To prohibit the importation of the GM maize variety, DAS-40278-9; and
(c) Ensure that the provisions for public participation with regard to the GMO decision-making process in South Africa are transparent, just and fair.

In the event that Parliament does not at this stage agree with our requests set out in (a) and (b) above, we call on Parliament to at the very least, investigate and conduct public hearings on the approval of the 2,4 D GM maize in South Africa.

The following points outline the reasons for our request:

Introduction

1. On the 15th of May 2012[1], the Executive Council: Genetically Modified Organisms Act (the primary decision-making body in the Republic of South Africa concerning genetically modified

organisms), approved Dow Chemical's variety of genetically modified (GM) maize, DAS-40278-9, for importation as food, feed and processing.

2. This GM variety has been genetically engineered to withstand liberal applications of Dow's toxic chemical herbicide 2,4-D. The GM variety has yet to be approved for growing anywhere in the world. An application for commercial cultivation has been lodged by Dow in the United States, where it is pending approval amid a maelstrom of protest from diverse sectors of US society, ranging from public health professionals to US farmers.

3. 2,4 D was one of the active ingredients present in the now infamous 'Agent-Orange' chemical defoliant, used to devastating effect by the US military during the Vietnam War. Dow's 2,4-D tolerant GM maize has been developed in the face of widespread glyphosate resistant weeds appearing on US farm lands. Such weed resistance could potentially undermine the biotechnology industry's glyphosate tolerant crops (synonymous with Monsanto's 'Roundup-Ready' brands), which still account for 85% of all GM crops grown worldwide.[2]

4. The use of 2,4-D is banned completely in Norway, Sweden and Denmark.[3] In Canada, the use of pesticides containing 2,4-D on lawns is banned in Quebec, Newfoundland and Labrador[4] and Nova Scotia. In 2010 the province of Alberta banned fertiliser-herbicide combinations in 2010, due to concerns that these products result in the overuse of 2,4-D and threaten the health of waterways. Ontario's Cosmetic Pesticides Ban Act, which took effect in 2009, has prohibited the use of 2,4-D for 'cosmetic uses' on outdoor residential and landscape areas, vegetable and ornamental gardens, parks and school yards. Manitoba plans to introduce similar legislation in late 2012 or early 2013.[5]

5. In 1990, a group of fresh vegetable producers from the Tala valley in KwaZulu Natal took legal action against a herbicide manufacturer, after their crops were damaged by herbicides, including 2,4-D.[6] This ultimately led to a ban on the aerial application of 2,4-D (in its dimethylamine salt form) in KwaZulu-Natal and a total ban in the magisterial districts of Camperdown, Pietermaritzburg and Richmond. In its ester form, 2,4-D was completely prohibited from use in the province. In 1980 2,4-D was withdrawn from agricultural use in the Western Cape.[7]

Food safety

6. The World Health Organisation's International Agency for Research on Cancer (IARC) classifies the Chlorophenoxy herbicide group, of which 2,4-D is by far the most widely used member, as 'possibly carcinogenic to humans'.[8]

7. Numerous studies in humans have reported an association between exposure to 2,4-D and non-Hodgkin's lymphoma, a cancer of the white blood cells.[9] The first studies to link 2,4-D with non-Hodgkinson's lymphoma were published in Sweden over thirty years ago.[10] Other studies have found that 2,4-D formulations are cytotoxic (damages and kills cells), mutagenic, exhibit hormone disrupting activity,[11] and affects the function of the neurotransmitters dopamine and serotonin.[12]

8. Experiments in which lactating rats were fed low doses of 2,4-D revealed that the chemical inhibits breast feeding from mother to pup[13] and as a consequence, led to weight loss in the

offspring.[14] 2,4-D and its formulations have been found to cause chromosome and DNA damage in hamster ovary cells,[15] the bone marrow and developing sperm cells of mice,[16] and sister chromatid exchange (which has been linked to the formation of tumours) in chicken embryos.[17]

GMO safety

9. It is often stated that people have been eating GM food in the United States (and elsewhere) for over 15 years without any documented case of ill effects. Similar statements have been frequently made in South Africa. However, this is an anecdotal, scientifically untenable assertion, as no epidemiological studies to look at the effects of GM foods on public health have ever been undertaken.[18] It is difficult to conceive how such a study may even be undertaken, given the lack of labelling of GM food (South Africa has introduced GM labelling, but this is not being enforced due to the food industry having difficulty with interpreting the provisions of the law). The longest tests that are routinely conducted on GM foods for regulatory assessment are 90-day rodent feeding trials. In comparison, before a pesticide or a drug can be approved, it must undergo one and two year toxicity trials, and reproductive tests on mammals.[19]

10. A number of peer reviewed studies have indicated potential risks to human health from eating food produced using genetic modification. For example:

- A review of 19 studies of mammals fed with GM maize and soybean (including raw data from feeding studies obtained through the law courts and official requests) indicated 'liver and kidney problems as the end points of GMO diet effects'.[20]

- A study designed to test for the impacts of GM food in vulnerable populations (using weaning and old mice as proxies) indicated that these population groups could be particularly susceptible to GM related health risks.[21]

- Female sheep fed Bt[22] GM maize over three generations showed disturbances in the functioning of the digestive system, while their lambs showed cellular changes in the liver and pancreas.[23]

Testing for pesticide residues in food

11. We have noted the Department of Agriculture, Forestry and Fisheries' (DAFF) Media Statement 'on so called agent orange maize', dated the 26th of July 2012. We wish to challenge the assertion made in such Media Statement that residue levels of 2,4-D contained in the imported GM maize variety will be adequately monitored and tested. In this regard, we state the following:

(a) Recently, the ACB wanted to test food samples for glyphosate residues. In the course of trying to get these samples tested, the ACB learnt that while there are numerous private testing laboratories throughout South Africa, nine of which are ISO 17025[24] accredited,[25] none were able to test for glyphosate residues in our samples. If we wanted to test for glyphosate residues, we would have been forced to send our samples abroad, at considerable expense.

(b) This means that there is a complete lack of testing of local market produce! This is particularly perturbing given that GMO authorities in the country have seen fit to authorise the commercial cultivation of GM herbicide tolerant crops that increase glyphosate usage, without there being any capacity development for local laboratories to monitor the consequences.

(c) Local government health authorities are responsible for the inspection and monitoring of imported foodstuffs in terms of the National Health Act. Capacity constraints appear to be a significant issue throughout the system. According to information from the Health Professionals Council of SA (HPCSA), as of the 31st of March 2012, there were over 165,000 registered qualified health practitioners in South Africa. Of these 3,264 are classified under environmental health, with just 11 (eleven) 'food inspectors' among them. By way of comparison, there are 2,397 registered dieticians on the list.

(d) Municipalities suffer from severe capacity constraints and do not undertake any testing for herbicide residues. Laboratories at the DAFF and the Johannesburg Fresh Produce Market (JFPM) are used for screening and surveillance principally for microbiological contamination.[26] This situation contrasts starkly with the well resourced and efficient system set up for the testing of food destined for export to Europe, which is regularly and carefully tested to be sure exports to international markets comply with phytosanitary requirements.

12. The DAFF's Media Statement explains that the Maximum Residue Limit (MRL) for 2,4-D currently permitted in maize in South Africa is 0.5 mg / kg. The DAFF further contends that *"the MRL applies to both the conventional maize and the 2, 4-D tolerant GM maize. Should the current approved MRL of 0.5 mg/kg be exceeded due to increased use of the herbicide on the tolerant GM maize, the risk associated with the use of 2, 4-D on imported maize will be re-evaluated."*

We find this statement highly problematic for the following reasons:

(a) First, to say that this MRL applies to both conventional and 2,4-D tolerant maize, clouds the issue. 2,4-D applied directly to conventional (or GM maize not tolerant to 2,4-D) would likely cause severe crop damage, making such direct application extremely unlikely. The risk of the MRL for 2,4-D being exceeded will clearly be in maize that is tolerant to it.

(b)There is therefore, a direct link between this particular GM variety and the potential for higher residues of 2,4-D. Indeed, Dr. Charles Benbrook, a highly respected agricultural scientist from the United States (and former executive director of the US National Academy of Sciences) predicts that the widespread planting of 2,4-D tolerant maize could trigger a 30-fold increase in the herbicides' use by the end of the decade.[27]

Key questions for DAFF

13. In light of the above, the DAFF should provide Parliament and the South African public with more detail as to the monitoring of 2,4-D residue levels in South African food imports, specifically:

(a) How will the DAFF know whether residues in maize both grown in South Africa, and imported maize will exceed the MRL of 0.5mg/kg?

(b) What testing programme for 2,4-D has been in place to date?

(c) How many and which samples are tested annually in domestic markets?

(d) How and where are the results from these samples reported?

(e) What laboratories do this testing and how many of these have Good Laboratory Practice (GLP) accreditation?

(f) What testing programme will be in place in future to ensure that the DAFF can confirm whether residues in maize will not exceed the MRL of 0.5mg/kg, as per a, b, c, d and e, above.

Inadequate transparency and public participation

14. Decisions taken by the Executive Council: GMO Act approving applications for the import, release into the environment and marketing of GMOs affect the fundamental human rights of the public, including but not limited to, the right to fair administrative decision-making (which includes public participation as a necessary element in the decision-making process).

15. The lack of adequate room for meaningful public involvement in decision-making concerning GMO approvals in South Africa is a serious and ongoing cause for concern. The ACB and many other organisations, have for a number of years, campaigned strenuously for transparent and meaningful public participation in the GMO decision-making process.[28] In 2009, the ACB, supported by several organisations, was compelled to lodge a complaint to the Compliance Committee of the Cartagena Protocol on Biosafety, in a bid to force the South African government to make pertinent information regarding GMO decision-making public in line with its international obligations.[29] Unfortunately, the Compliance Committee did not intervene as it felt that the mandate of the Committee extends only to complaints lodged by governments and not also to public interest groups.

16. Currently, an applicant (Dow Chemical, for example) applying for a commodity clearance permit need only publish a public notice in 3 national newspapers. Consequently, if members of the public do not pick up a notification on the day of its publication, they will effectively be excluded from participating in the process. Furthermore, the details of the application are not openly available to the public, for example on the internet, but must be requested and paid for through a Public Access to Information request. Once a decision has been made, it can take several months for it to become common knowledge. This case is indicative. According to the DAFF's statement, the Executive Council approved the importation of this variety during May. However, this was only included in the GMO permit list for June,[30] meaning it was not publicised on their website until July.

17. The now disbanded National Environmental Advisory Forum produced a study titled " Public Participation in the Context of the Regulation of Genetically Modified Organisms in South Africa" in

March 2008. In such study, a number of recommendations were made for greater transparency and public participation in the decision-making process. These have to date, not been implemented.

Conclusion

18. In concluding, we wish to draw Parliament's attention to the findings of the landmark UN-led study, the International Assessment of Agricultural Knowledge, Science and Technology for Development (IAASTD), which is the most comprehensive review of global agriculture ever undertaken. Its findings were approved in 2008 by the overwhelming majority (95%) of governments attending the final intergovernmental plenary in Johannesburg. The IAASTD did not support the biotechnology industry's claims that GM crops have led to increased yields (and therefore more food), nor to a reduction in the use of chemical pesticides. As already discussed above, Dow's 2,4-D GM maize variety is likely to lead to a substantial increase in 2,4-D applications in the United States, and anywhere else for that matter, where it is approved for commercial growing. Any benefits that have arisen from the technology have not been shared equally, having largely bypassed small-holder and peasant farmers, and accrued to the large multinational seed, agro-chemical and grain trading and processing multinationals.[31]

19. The IAASTD's Director, Professor Robert T. Watson put it succinctly when stating: *'If we do persist with business as usual, the world's people cannot be fed over the next half century. It will mean more environmental degradation, and the gap between the haves and have-nots will expand. We have an opportunity now to marshal our intellectual resources to avoid that sort of future. Otherwise we face a world nobody would want to inhabit."*[32]

The IAASTD powerfully advocates for a new mode of agriculture, in which systems of knowledge, research and production are location specific, and in which decisions are made based around social equity and environmental sustainability. This shift towards 'agroecology' will, by necessity, be a long and arduous one. The decision to allow the import of Dow's 2,4-D tolerant maize variety is a clear signal from the DAFF that it is very much business as usual, which will only make the shift to an alternative agriculture all the more traumatic when inevitably it will have to be made.

Signed Mariam Mayet, Director, African Centre for Biosafety
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Member of Parliament supporting this Petition:

Ms Cheryllyn Dudley, MP African Christian Democratic Party

Professionals and Academics from South Africa Supporting this Petition:

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5. Dr Indira Govender, MBChB, MMed (UCT), FCPHM (CMSA)
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6. Professor Laurel Baldwin-Ragaven MD, FCFP
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7. Judith Favish, Institutional Planning Department
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8. Prof David Sanders
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9. Dr Shuaib Manjra
   Occupational Health Physician, Cape Town

10. Dr Chandre Gould, senior policy researcher and member of the Academy of Science Biosafety and Biosecurity Standing Committee

11. Dr Rose Richards, writer of development and narrative research

12. Dr Helena Rabie
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13. Dr David Pienaar
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14. De Elisabetta Walters
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15. Dr Penelope Rose, Paediatrician,
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16. Professor Eugene K Cairncross (Ph.D. Chemical Engineering),
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17. Dr Salma Ismail Senior Lecturer
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18. Dr Irwin Friedman (Public Health Physician
    The SEED Trust, Sustainable Enterprise for Enabling Development

Professional Health Associations Supporting this Petition:

1. Public Health Association of South Africa (PHASA) –Contact Person: Laeticia Rispel, President
2. People's Health Movement (South Africa)-Contact Person: Lydia Cairncross, Chair

Organisations from South Africa supporting this Petition:

1. Trust for Community Outreach and its collective, ZINGISA, MASIFUNDE, Itireleng, CALUSA and Khanyisa
2. Surplus People Project
3. Southern Cape Land Committee
4. Women on Farms
5. Agrarian Reform for Food Sovereignty
6. Earthlife Africa Johannesburg
7. Earthlife Africa eThekwini
8. Earthlife Africa Cape Town
9. Abalimi Bezekhaya

10. Farm & Garden National Trust
11. Biowatch South Africa
12. Groundwork, Friends of the Earth South Africa
13. Research For the Future
14. Coalition Against Nuclear Energy
15. Food & Trees for Africa
16. Environment Monitoring Group (EMG)
17. Biodynamic Association of Southern Africa
18. Kagyu Samye Dzong Cape Town, Buddhist Centre for World Peace and Health
19. Southern African Faith Communities' Environment Institute (SAFCEI)
20. The Rural Educational Development Corporation (Rucore)

Government Agencies supporting this Petition:

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Individuals from South Africa and abroad Supporting this Petition:

1. Terry Bell
Investigative journalist/analyst/columnist
Cape Town
2. Justine Quince, Cape Town

Scientists from outside SA supporting this Petition

1. Dr. Vandana Shiva
Navdanya/Research Foundation for Science Technology & Ecology

2. Professor C V Howard. MB. ChB. PhD. FRCPath
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Organisations from outside South Africa supporting this Petition:

1. Environment Rights Action, Friends of the Earth, Nigeria
2. Friends of the Earth, International
3. Pelum, Kenya
4. Genewatch, UK
5. Pesticide Action Network, Germany
6. Partners for the Land & Agricultural Needs of Traditional Peoples, US
7. Washington Biotechnology Action Council, US
8. Pesticide Action Network, North America
9. Greenpeace Africa

Accompanying documents:

* Briefing paper titled ' How much glyphosate is on your dinner plate: South Africa's food safety compromised by lack of testing', July 2012
* Petition signed by more than 5000 people supporting a ban on Dow's 2,4 D GM maize
* Public Participation in the Context of the Regulation of Genetically Modified Organisms in South Africa" published by National Environmental Advisory Forum, March 2008
* Media Statement From The Department Of Agriculture, Forestry And Fisheries On The So-Called Agent Orange Maize, 26 July 2012

References and notes

[1] The Department of Agriculture, Forestry and Fisheries' media statement 'on so called agent orange maize', dated 26th of July 2012, states this was approved in May 2012. However, this decision was not included in the GMO permit list published for May, but was included in the permit list for June (which were published on the DAFF's website in July). Thus, the public was not made aware of this decision for nearly 2 months.

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[3] Boyd, D (2006). **The Food we eat: An international comparison of pesticide regulations.** David Suzuki Foundation. http://www.davidsuzuki.org/publications/downloads/2006/DSF-HEHC-Food1.pdf

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[10] Hardell L, Eriksson M, Lenner P, et al (1981). **Malignant lymphoma and exposure to chemicals especially organic solvents, chlorophenols and phenoxy acids: A case-control study.** *Br J Cancer 43:169-176*

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[14] Sturtz et al. (2010)

[15] Gonzalez M, Soloneski S, Reigosa MA, Larramendy ML (2005). **Genotoxicity of the herbicide 2,4-dichlorophenoxyacetic and a commercial formulation, 2,4-dichlorophenoxyacetic acid dimethylamine salt. I. Evaluation of DNA damage and cytogenetic endpoints in Chinese Hamster ovary (CHO) cells.** *Toxicol In Vitro 19(2):289-97,*

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[22] Bt refers to GM crops engineered to create a pest toxin in the cells of the plant. The majority of GM maize in South Africa up until 2010 was engineered in this way.

[23] Trabalza-Marinucci M, Brandi G, Rondini C, et al. **A three-year longitudinal study on the effects of a diet containing genetically modified Bt176 maize on the health status and performance of sheep.** *Livestock Science. 2008; 113(2): 178–190.*

[24] ISO 17025 is the recognised international standard for competence of testing and calibration laboratories.

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[29] http://acbio.org.za/index.php/gmo-regulatory-issues/110-south-africa/235-formal-complaint-to-the-compliance-committee-of-the-cartagena-protocol-on-biosafety

[30] http://www.nda.agric.za/doaDev/sideMenu/biosafety/doc/GMO%20permits%20-%202012(no%20marker).pdf

[31] **Biotechnology and sustainable development: Findings from the UN-led Assessment of Agricultural Knowledge, Science and Technology for Development.** Pesticide Action Network North America. http://www.panna.org/sites/default/files/GMOBriefFINAL_2.pdf (2010)

[32] Ibid.