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Title: **Safety of Monsanto's Genetically Engineered Maize Thrown into Doubt**

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THIRD WORLD NETWORK BIOSAFETY INFORMATION SERVICE

Dear friends and colleagues

Re: Safety of Monsanto's Genetically Engineered Maize Thrown into Doubt

Please find below a report about new results on the health impacts of the widely used Roundup herbicide and the Roundup tolerant genetically engineered maize NK603, which were presented at an international scientific conference on biosafety in Hyderabad, India.

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Safety of Monsanto's genetically engineered maize thrown into doubt

Hyderabad, 2 October (Lim Li Ching) – New results about the health impacts of the widely used Roundup herbicide and the Roundup tolerant genetically engineered maize NK603 have been presented at an international scientific conference on biosafety in Hyderabad, India.

Agribusiness giant Monsanto manufactures these products.

The research, recently published in the journal Food and Chemical Toxicology, demonstrated increased and more rapid mortality in rats, coupled with hormonal non-linear and sex-related effects. Females developed significant and numerous mammary tumours, pituitary and kidney problems. Males died mostly from severe chronic deficiencies to the liver and kidney.

The biosafety conference was organized by the European Network of Scientists for Social and Environmental Responsibility, Third World Network and the Tara Foundation. The conference was held from 28-29 September 2012 and was part of a series of activities organized in conjunction with the sixth Conference of the Parties serving as the Meeting of the Parties (COP-MOP6) to the Cartagena Protocol on Biosafety.

[The Cartagena Protocol on Biosafety is the only international law regulating

genetically modified organisms, or living modified organisms (LMOs) as they are known in the Protocol. The Protocol is a treaty under the Convention on Biological Diversity.]

The study was presented by Robin Mesnage, part of the team at the University of Caen in France that carried out the research. It was a long-term animal feeding trial of greater duration (spanning the average life-span of rats, two years) and with more detailed analyses than any previous studies to date.

The research focused on Roundup, which is the most widely used herbicide in the world, and a crop genetically engineered to be tolerant to Roundup, NK603 maize. The majority of genetically engineered crops available on the market are engineered to be tolerant to Roundup, and Roundup residues are widespread on food and feed.

Earlier studies had already demonstrated Roundup toxicity on human cells, at levels far below agricultural dilutions. These effects occurred on hepatic, embryonic and placental cell lines, and on human placental extracts, primary umbilical cord cells and freshly isolated testicular cells. Glyphosate, the active ingredient of Roundup, had also been found to cause endocrine disruption in human cells at sub-agricultural doses. Previous research had also found that adjuvants added to the herbicide formulations are not inert, but rather can be the active route for toxicity.

Meanwhile, a re-analysis of the raw data of a 90-day feeding trial with rats fed Roundup tolerant NK603 had previously showed signs of toxic effects on liver and kidney.

Therefore, this latest research studied the effects of the full commercial formulation of Roundup, as well as of the genetically engineered maize, on its own as well as sprayed with Roundup.

The results, as presented at the conference, showed that rats fed with the genetically engineered maize and/or Roundup died more rapidly. The first male fed the genetically engineered maize to die did so one year before the first control, while the first female, eight months before the first control. Significantly, mortality was higher in the treated groups, for example, there was two to three times more mortality in all treated female groups.

According to the researchers, tumours also developed more rapidly in rats fed the genetically engineered maize and/or Roundup; up to 600 days before the controls in males, which saw tumours develop in the skin and kidneys, and on average 94 days before the controls in females, largely in the mammary glands. There were two to three times more tumours in treated rats for both sexes.

All in all, the study found that female rats died mostly from mammary tumours and pituitary dysfunctions, while males died mostly from pathologies in the liver and kidneys. The pathological profiles were similar for the three treatments.

The researchers hypothesized that the reason why NK603 maize, NK603 maize sprayed with Roundup, and Roundup on its own, all produced very similar impacts, is that both the genetically engineered maize and Roundup may cause hormonal disturbances in the same biochemical and physiological pathway.

The researchers recommended that the authorizations of these products need to be reconsidered. This is perfectly consistent with the Cartagena Protocol on Biosafety, which in its Article 12 preserves the right of Parties of import to, at any time, in light of new scientific information, review and change their decision regarding an LMO

import. Many national biosafety laws also contain such safeguards to enable the authorities to take into account new information on potential adverse impacts, not only on biological diversity, but also on human health.

Furthermore, the scientists recommended that the existing risk assessment protocols should be revised in light of the findings. Specifically, the 90-day tests with rats, which are currently done by the industry and presented to regulators, need to be extended to two years for all LMOs, and pesticides need to be tested for two years at low levels and with their full commercial formulations.

As Parties to the Cartagena Protocol gather for their sixth meeting in Hyderabad, these new results should inform their discussions, in line with the precautionary principle, particularly on risk assessment and risk management, and including on the identification of LMOs or specific traits of LMOs that may adverse effects on the conservation and sustainable use of biological diversity, taking into account risks to human health.

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