

## Study Shows Monsanto Roundup Herbicide Link to Birth Defects

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Global Research, September 30, 2010

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*A major new scientific study has confirmed growing conviction that the world's most widely used chemical herbicide, Monsanto Corporation's Roundup is toxic and a danger to human as well as animal organisms. The latest scientific research carried out by a multinational scientific team headed by Professor Andrés Carrasco, head of the Laboratory of Molecular Embryology at the University of Buenos Aires Medical School and member of Argentina's National Council of Scientific and Technical Research, presents alarming demonstration that Monsanto and the GMO agribusiness industry have systematically lied about the safety of their Roundup. Roundup in far lower concentrations than used in agriculture is linked to birth defects. The health implications are huge. All major GMO crops on the market today are genetically manipulated to "tolerate" the herbicide Roundup.*

Glyphosate was patented by Monsanto in the 1970's well before GMO was commercialized, as a so-called broad-spectrum weed killer. It is typically sprayed and absorbed through the leaves, or used as a forestry herbicide. It was initially patented and sold by Monsanto under the trade name Roundup, which also contains non-disclosed added chemicals the company refuses to divulge for "trade secret" reasons. As of 2005, 87% of all US soybean fields were planted with glyphosate-resistant varieties of GMO soybeans and sprayed with Roundup.

Because the seeds of Monsanto Roundup Ready GMO soybeans or other crops have been manipulated solely to be "resistant" to Roundup herbicide, while all other plant life in the field is killed by Roundup, farmers using Roundup Ready seeds must also purchase Roundup herbicide, making a captive market for both seed and chemicals.

The problem with this cozy arrangement, aside from the fact that Roundup-resistant "super-weeds" are emerging as a new biological catastrophe (see Katastrophale Folgen von GVO-Pflanzen in den USA – eine Lektion für die EU), is that Glyphosate has now been demonstrated to be linked to birth defects as one of the most highly toxic substances in agriculture. The US Government's Environmental Protection Agency (EPA), nonetheless continues to regard Roundup as "relatively low in toxicity, and without carcinogenic or teratogenic effects." In the United States the US Government notoriously relies on test data from Monsanto and the agribusiness industry to make safety rulings, under the 1992 doctrine of Substantial Equivalence which asserts that GMO seeds are "substantially equivalent" to ordinary seeds and thereby need no independent health or safety tests. While herbicides are treated slightly different, the fact that the agribusiness industry influences much of US Government policy has insured the most benign regulatory treatment of Roundup to date.

### Alarming results

Now a new international scientific team headed by Prof. Andres Carrasco and including researchers from the UK, Brazil, USA, and Argentina have demonstrated that Glyphosate, the main active ingredient in Roundup causes malformations in frog and chicken embryos at doses far lower than those used in agricultural spraying and well below maximum residue levels in products presently approved in the European Union.[1] The Carrasco group was led to research the embryonic effects of glyphosate by reports of high rates of birth defects in rural areas of Argentina where Monsanto's genetically modified "Roundup Ready" (RR) soybeans are grown in large monocultures sprayed from airplanes regularly. RR soy is engineered to tolerate Roundup, allowing farmers to spray the herbicide liberally to kill weeds while the crop is growing.

Carrasco presented his group's findings at a press conference during the 6th European Conference of GMO Free Regions in the European Parliament in Brussels. He stated, "The findings in the lab are compatible with malformations observed in humans exposed to glyphosate during pregnancy."

Widespread reports of human malformations began to be reported in Argentina beginning 2002, two years after widespread aerial spraying of Roundup and planting of RR Soybeans was begun. The test animals used by Carrasco's group share similar developmental mechanisms with humans. The authors concluded that the results "raise concerns about the clinical findings from human offspring in populations exposed to

Roundup in agricultural fields." Carrasco added, "The toxicity classification of glyphosate is too low. In some cases this can be a powerful poison."

The maximum residue level (MRL) allowed for glyphosate in soy in the EU was raised 200-fold from 0.1 mg/kg to 20 mg/kg in 1997 after genetically manipulated Roundup Ready soy was commercialized in Europe. Carrasco found malformations in embryos injected with 2.03 mg/kg glyphosate. Soybeans can typically contain glyphosate residues of up to 17mg/kg.

In August 2010 an organized mob violently attacked people who gathered to hear Carrasco talk about his research in the town of La Leonesa, Chaco province. Witnesses implicated local agro-industry figures in the attack. Viviana Peralta, a housewife from San Jorge, Santa Fe, Argentina was hospitalized together with her baby after Roundup spraying from planes flying near her home. Peralta and other residents launched a lawsuit that resulted in a regional court ban on the spraying of Roundup and other agrochemicals near houses.

#### Note

1. Paganelli, A., Gnazzo, V., Acosta, H., López, S.L., Carrasco, A.E. 2010. Glyphosate-based herbicides produce terato-genic effects on vertebrates by impairing retinoic acid signaling. *Chem. Res. Toxicol.*, August 9. <http://pubs.acs.org/doi/abs/10.1021/tx1001749>

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