

# GMO MYTHS AND TRUTHS REPORT

## 4. Health hazards of roundup & glyphosate

### Section at a glance

<http://earthopensource.org/index.php/4-health-hazards-of-roundup-and-glyphosate>

- Roundup, the herbicide that most GM crops are engineered to tolerate, based on the chemical glyphosate, is marketed as a “safe” herbicide, based on outdated and largely unpublished studies by manufacturers.
- But laboratory and epidemiological studies confirm that Roundup poses serious health hazards, including endocrine (hormone) disruption, DNA damage, cancer, birth defects, and neurological disorders.
- Some of these effects are found at low, realistic doses that could be found as residues in food and feed crops and in contaminated water. People who eat foods made from GM crops could be ingesting potentially dangerous levels of Roundup residues.
- Roundup and glyphosate have been detected in air, rain, groundwater, in people’s urine, and even circulating in women’s blood. Glyphosate can cross the placental barrier and the unborn fetus could thus be exposed.
- The “safe” dose for Roundup exposure set by regulators is not based on up-to-date objective evidence; thus current regulations do not protect the public.

### Introduction

Over 75% of all GM crops are engineered to tolerate herbicides. Roundup Ready (RR) soy is the most widely grown GM crop, making up 52% of all GM crops.<sup>1</sup> RR soy is engineered to tolerate Roundup herbicide, the main ingredient of which is glyphosate. The RR gene enables farmers to spray the field liberally with herbicide. All plant life is killed except the crop.

The widespread adoption of GM RR soy in North and South America has led to massive increases in the use of Roundup and other glyphosate herbicides.<sup>2</sup>

In South America, a public health crisis has emerged around the spraying of Roundup on GM soy, which is often carried out from the air. The problem made headlines on the publication of a 2010 study by Argentine researchers showing that glyphosate and Roundup caused malformations (birth defects) in frog and chicken

embryos at doses far lower than those used in agricultural spraying. The malformations seen in the experimental embryos were similar to human birth defects reported in GM soy-growing areas of South America.

The researchers said the results were relevant to humans because humans have the same developmental mechanisms as frogs and chickens. The study identified the pathway through which glyphosate and Roundup affect embryonic development, the retinoic acid signaling pathway.<sup>3</sup>

A report by physicians in Argentina based on clinical data reported the following health effects in people exposed to spraying of agrochemicals (mostly glyphosate) on GM Roundup Ready soy: increased incidence of birth defects, miscarriages, infertility, cancers, DNA damage (which can lead to cancer and birth defects), neurological developmental problems in children, kidney failure, respiratory problems, and allergies.<sup>4</sup>

A report commissioned by the provincial government of Chaco, Argentina, found that the rate of birth defects increased fourfold and rates of childhood cancers tripled in only a decade in areas where rice and GM soy crops are heavily sprayed. The report noted that problems centered on “transgenic crops, which require aerial and ground spraying with agrochemicals”; glyphosate was named as a chemical of concern.<sup>5</sup>

These issues are relevant not only to people living in regions where GM RR crops are grown, but for consumers who eat products made from crops sprayed with glyphosate. GM RR crops do not break down glyphosate, but absorb it. Some is broken down (metabolised) into a substance called aminomethylphosphonic acid (AMPA). Both glyphosate and AMPA remain in the plant and are eaten by people and animals. Both are toxic.

Scientific evidence suggests that Roundup and other commercial formulations are more toxic than glyphosate alone – yet it was glyphosate alone that was tested by industry prior to market authorization and approved by regulators. The herbicide formulations as they are sold and used have not been properly tested and assessed for safety.

*- See more at: <http://earthopensource.org/index.php/4-health-hazards-of-roundup-and-glyphosate#sthash.HjF1G0iq.dpuf>*

<http://earthopensource.org/>