

Glyphosate (Active Ingredient in RoundUp)

Not as Safe as the Label Indicates

Although it **has** been believed that glyphosate, the active ingredients in RoundUp, is a relatively innocuous herbicide, new studies show that it **poses multiple dangers to human health and the environment**.

Glyphosate is **used extensively** in agriculture, the nursery industry, along highways and rights of way, and by homeowners. It is already the **most widely used herbicide in the United States**. Each year more than 250 million pounds of glyphosate are sprayed on American crops, primarily on **corn and soybeans** which have been genetically engineered to withstand the herbicide. And increasingly, glyphosate is **sprayed just before harvest of wheat, barley, oats and beans** that are not genetically engineered, allowing farmers to harvest these crops sooner.

Just as glyphosate's use is rapidly increasing, more and more studies indicate risks that it poses.

HUMAN HEALTH CONCERNS

1) Cancer

In 2015 the World Health Organization's International Agency for Research on Cancer did an extensive review of U.S., Canadian and Swedish epidemiological studies on glyphosate's human health effects and concluded that glyphosate is "**probably carcinogenic to humans**." In 2017 California listed glyphosate as a chemical "**known to cause cancer**" and required that it be labeled as such.

In 2018 a landmark decision by a **federal court ordered Monsanto to pay \$289 million** in damages to a man dying of cancer who had repeatedly been exposed to glyphosate while working as a school grounds keeper. Since then at least two other law suits have supported claims of health damages due to glyphosate.

1) Antibiotic Effects on Human Microbiota

It is now known that due to its antibacterial properties, glyphosate can and does **affect bacteria in the soil and in the human body**. And we know that 90 percent of the cells in a human body are bacteria. The **destruction of beneficial microbiota in the human gut** and elsewhere in the human body, is concerning. Unfortunately beneficial bacteria are more susceptible to glyphosate than are "bad" bacteria, shifting away from a desirable balance. It is believed that this **imbalance** is correlated to diseases such as diabetes, allergies, obesity, heart disease, neurological disorders in children, antibiotic resistant infections, etc.

INACTIVE INGREDIENTS MAGNIFY GLYPHOSATE EFFECTS

Glyphosate is almost always formulated as a product containing "inactive ingredients". These commercial products, e.g. RoundUp, are **more toxic than glyphosate alone**. Scientists have found that inactive ingredients combined with glyphosate "**amplified the toxic effect on human cells**" even at concentrations much more diluted than those used on farms and lawns."

And it is particularly significant to know that **testing done by manufacturers is done on glyphosate alone**, not the formulated product. Thus testing results and warnings on product labels are not representative of real world conditions.

DEGRADATION OF SOIL

Glyphosate affects the soil in a number of ways. **First**, the antibacterial property has an **adverse effect on soil microbes**, essential to soil health. Scientists are now finding that repeated applications of glyphosate tend to starve and sicken the very crops that it is supposed to protect. **Secondly**, glyphosate **binds up essential minerals**, again resulting

in poor crop production. And as poor results in the field are found, new stronger and combination products are being sought. And **thirdly**, glyphosate **has an adverse effect on earth worms** whose castings are a valuable organic source for plant nutrients. Earth worms also help to drain water, bring in oxygen and create spaces for plant roots.

EFFECTS ON POLLINATORS

- 1) A 2014 study showed that field realistic levels of glyphosate have a negative effect on a **bee's sensitivity to finding nectar** and also results in **impaired learning ability**.
- 2) A 2018 study showed that glyphosate **damages the beneficial bacteria in the guts** of honeybees, making them more prone to deadly infections.
- 3) The **loss of habitat** due to the adoption of **glyphosate tolerant corn and soybeans** in the last 10 years amounts to at least **100 million acres**, which are now **barren of "weeds"** which once supported many species of pollinators. Populations of bees, butterflies, insects, birds and species who rely on these habitats are at risk, many already on the brink of extinction.

PERSISTENCE IN SOIL/WATER CONTAMINATION

While it has previously been thought that glyphosate rapidly degrades in soil, researchers now know that it **can have a half life of 47 to 174 days or longer** in the soil. Scientists have found that the chemical accumulates, particularly at the root zone and in the top few millimeters of top soil where it is **subject to run-off into adjacent water courses**. Glyphosate now commonly shows up in groundwater, surface water and some marine environments.

OTHER COMMERCIAL PRODUCTS CONTAIN GLYPHOSATE

While RoundUp is the most widely used product containing glyphosate, there are **many others**, also containing glyphosate, which are readily available to the public. Some of these are RangerPro, Monerey Remuda, Weed Impede 2 in 1, Erase Max, Hi Yield Killzall, Aqua Star Aquatic Herbicide, Aqua Neat Aquatic Herbicide, Pronto Vegetation Killer, and Bonide Ground Force Vegetation Killer. **Consumers who want to avoid glyphosate must read labels.**

IS GLYPHOSATE IN OUR FOOD?

Federal agencies have been slow to do anything more than limited testing on a few products. However, in August of 2018 an independent lab hired by the **Environmental Working Group** released the results of extensive testing on many oat cereals and found **glyphosate in most samples of oat-based cereals**. (See "Breakfast With a Dose of RoundUp?" <https://www.ewg.org/childrenshealth/glyphosateincereal/#.W3bVOvZFzGg>.)

Clearly federal agencies must be more involved in conducting testing, disseminating information and taking the lead in protecting the health of its citizens. It is **especially critical for young children** whose lower body weight and less developed immune systems put them particularly at risk.

WHAT WE CAN DO

Know the facts and let decision makers know of your concerns. Do not use lawn or garden products containing glyphosate. Read labels to be sure you know what you may be buying. Purchase and eat organic food and support organic agriculture through your purchases and donations. Spread the word!

