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### 3 Reasons Food Is Getting More Toxic

*Processed foods are the worst, but even plant and animal foods can be contaminated by phosphate fertilizers, glyphosate herbicides and biosolids (human waste used as fertilizer).*

**By Dr. Joseph Mercola**

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#### Story at a glance:

- Toxicity in food comes from several sources. Toxic influences during the plants' growth phase include phosphate fertilizer (which has a radioactive component), waste sludge and glyphosate.
- Up to 90% of the phosphorous is lost through the supply chain from mining to final fertilizer, and the losses are poorly documented, making it difficult to improve efficiency and prevent losses — which ultimately end up as pollution.
- Phosphate contains a radioactive element, polonium-210, which may be taken up by the plant, raising unanswered questions about food safety.
- Glyphosate was identified as a probable human carcinogen in 2015 and has been linked to a wide range of possible health problems. Glyphosate is also a phosphate source, adding to the phosphorous loading of soil and water.
- Sewage sludge (aka biosolids), used as an inexpensive and readily available fertilizer, contains industrial waste, heavy metals and per- and polyfluoroalkyl substances (PFAS) chemicals linked to cancer and organ damage.

The fact that there are serious issues in our [food supply](#) is no longer a secret. Evidence not only reveals toxicity levels in food are rising but also that conventional agriculture has become a leading cause of environmental pollution and destruction.

Toxicity in food comes from several sources. Some toxins are accumulated during the growth phase, others are added during harvesting and processing, and yet others are introduced when the ingredients are manufactured into their final, processed food, form.

By far, the greatest concerns are relegated to [processed foods](#), but even whole foods, both plant and animal foods, can be [contaminated](#).

Here, my focus will be on three sources that have their origins in the growth phase: phosphate [fertilizers](#), [glyphosate herbicides](#) and biosolids (human waste [used as fertilizer](#)).

### **Data gaps in phosphate fertilizer supply chain**

According to estimates by the Food and Agriculture Organization of the United Nations, reported in its "[World Fertilizer Trends and Outlook to 2020](#)" report, the global demand for phosphate fertilizer is expected to exceed 45.8 million tons by 2020.

And, as noted by Science Daily, [food demand](#) is expected to increase by 60% by 2050, which means that unless changes are made, even greater amounts of phosphate will be required in the coming decades.

A major problem with conventional agriculture is the use of toxic fertilizers. Phosphorous (an element) is mined from phosphate rock (which contains phosphorous), and much of it ends up being lost in the process, ending up as [water pollution](#).

In water, phosphorous triggers toxic algae overgrowth and deoxygenation, which has led to massive dead zones where no marine life can survive. The nitrogen portion of fertilizer has also been identified as a leading cause of air pollution.

In a Sept. 4, 2019, paper, "Opening Access to the Black Box: The Need for Reporting on the Global Phosphorous Supply Chain," researchers in Sweden and Iceland warn that a lack of information about the global supply chain could trigger a [phosphate supply crisis](#) and lead to social, political and environmental upheaval.

Lead author Eduard Nedelciu, a researcher at the Department of Physical Geography at Stockholm University, told Science Daily:

"Cradle-to-grave reporting along the [phosphorus supply chain](#) can reveal the untold story about the social, environmental, ethical and economic price we pay for the food we see on our supermarket shelves.

"It can also help countries — most of which are dependent on phosphate imports — tailor better policies to decrease the vulnerability of their agricultural sector."

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### **Majority of phosphorous is wasted**

The researchers present four primary problems relating to the [reporting of phosphorous](#) and [phosphate fertilizers](#):

1. Terminologies and methodologies used when reporting data on phosphate deposits lack transparency and harmonization, making estimations of reserves unreliable.
2. Up to 90% of the phosphorous is lost through the supply chain, and the losses are poorly documented, making it difficult to improve efficiency and prevent losses — which ultimately end up as pollution.
3. Societal and environmental consequences that occur along the supply chain remain unaddressed.
4. Access to data along the supply chain is lacking, which prevents the assessment of sustainability goals.

Co-author Marie Katharine Schellens told Science Daily:

“Phosphorus information is power. Reliable and regular data gathering can leverage corporate social responsibility as well as political action. Both are needed to tackle many of the issues identified along the supply chain.

“Transparency can foster a [sustainable and socially just supply chain](#) for decades to come.”

### **Must we use phosphate fertilizers?**

While the general consensus is that phosphate is a prerequisite for food production, we now know that this isn't entirely true. The only reason it's required is because the agricultural system is not currently set up to take advantage of natural ecosystems.

As farmers transitioned over to monocropping and chemical-based agriculture, those ecosystems were lost and, with them, everything that makes growing food [without chemicals](#) possible.

There is in fact compelling evidence showing we do not need synthetic fertilizers to grow food, provided the soil is nurtured properly, as it is in biodynamic and [regenerative farming](#) systems.

There's also plenty of evidence showing fertilizers and other [agricultural chemicals](#) are a leading source of [environmental pollution](#), thereby threatening all life on earth. The idea that food production is a primary destroyer of the environment is inexcusable and intolerable. It doesn't have to be that way.

### **Hidden health hazards associated with phosphate fertilizers**

Aside from polluting waterways, phosphate fertilizers may pose a more direct risk to human health by way of food. Being a fertilizer, the phosphorous is taken up by the plants, of course, but it's not the nutrient itself that is the problem.

No, the problem is the fact that phosphate contains a radioactive element, which may be taken up by the plant as well.

The [concern](#) is an [outgrowth](#) of [tobacco science](#) showing one of the reasons [cigarette smoking](#) causes [lung cancer](#) is due to [polonium-210](#) — a decay product of natural uranium and a highly radioactive element. It's also chemically toxic.

While naturally present in small amounts in the environment, one of the primary sources of exposure is via calcium phosphate fertilizers, used on nonorganic tobacco fields and food crops respectively.

As noted in a 2009 study:

“In a person smoking one and a half packs of cigarettes (i.e., 30 cigarettes) per day, the [radiation dose](#) to the bronchial epithelium in areas of bifurcation is ... (8000 mrem) — the equivalent of the dose to the skin from 300 x-ray films of the chest per year.”

Similarly, a 2011 paper in the Journal of Oncology, “[Polonium and Lung Cancer](#),” explains:

“The alpha-radioactive polonium 210 (Po-210) is one of the most powerful carcinogenic agents of [tobacco](#) smoke and is responsible for the histotype shift of lung cancer from squamous cell type to adenocarcinoma. According to several studies, the principal source of Po-210 is the fertilizers used in tobacco plants ...

"Tobacco leaves accumulate Pb-210 and Po-210 through their trichomes, and Pb-210 decays into Po-210 over time. With the combustion of the cigarette smoke becomes radioactive and Pb-210 and Po-210 reach the bronchopulmonary apparatus."

As has become typical, [investigation revealed the tobacco industry](#) was aware of this as early as 1959. What's worse, they opted to not use an acid wash, which has been shown to effectively remove polonium-210 from the tobacco leaves, because the wash made the nicotine less absorbable, and hence less addictive.

### Could nonorganic food be radioactive?

Now, if radioactive polonium-210 makes tobacco leaves carcinogenic, what is it doing to our food? In the 1988 document, "[Release of Radium and Other Decay-Series Isotopes From Florida Phosphate Rock](#)," the Florida Institute of Phosphate Research concedes:

"It has been known for many years that phosphate ore contains 50 to 150 parts per million (ppm) of natural uranium, and hence its radioactive decay products ... most other soils and rocks ... average 1 or 2 ppm. ...

"A fundamental question arises as to the nature of population exposure to natural radiation ... and how that exposure is influenced by the presence and extraction of deposits of phosphate."

While that 1988 report does not address polonium exposure through food, another, even earlier, document does.

Remarkably, according to a long-forgotten 1983 report by Oak Ridge National Laboratory, "[Polonium-210 and Lead-210 in Food and Tobacco Products: A Review of Parameters and an Estimate of Potential Exposure and Dose](#)," meat and dairy products may expose consumers to radiation doses equivalent to that received by smokers from cigarette smoke.

As noted in this [paper](#):

"Tobacco smoking appears to provide a dose equal to or greater than that provided by dietary ingestion for both Pb-210 and Po-210 in bone tissues, liver and kidneys; and for Po-210 in the spleen for the three Western-style diets ...

"The smoking dose estimates are most comparable to those obtained for dietary intake by Arctic dwellers."

### Fluoridated water may also contain polonium-210

Yet another route of polonium-210 exposure is consumption of [fluoridated water](#), courtesy of the fluorosilicic acid used. This [chemical](#) byproduct, created during the phosphate fertilizer manufacturing process, is what is typically used to [fluoridate](#) municipal water supplies.

In 2015, Mosaic Fertilizer, one of the largest phosphate mining and fertilizer companies in the world, was fined \$2 billion by the U.S. Environmental Protection Agency over improper storage and disposal of waste, which was found to pose a hazard to groundwater resources.

A cruel irony is that fluorosilicic acid, another toxic waste product, is suddenly proclaimed "healthy" when purposely added to drinking water. Uranium and radium are two [known carcinogens](#) found in fluorosilicic acid used for [water fluoridation](#), and polonium-210 is one of two decay products of uranium.

Furthermore, polonium decays into stable lead-206, which also has significant health risks — especially in children — and research has indeed shown that drinking fluoridated water increases lead absorption in your body.

### Toxic glyphosate found in most foods and water supplies

Another chemical that is turning our food toxic is glyphosate, the active ingredient in Monsanto's [Roundup](#) herbicide. Glyphosate was [identified](#) as a [probable human carcinogen](#) by the International Agency for Research on Cancer in 2015.

More recently, a [meta-analysis](#) of six epidemiological studies published between 2001 and 2018 [concluded](#) glyphosate [increases the risk](#) of non-Hodgkin lymphoma — a group of blood cancers — [by 41%](#) in [highly exposed subjects](#).

Even if you're not [exposed](#) to [glyphosate-based herbicides](#) via application (which is the case with most who claim [glyphosate exposure](#) caused their [non-Hodgkin lymphoma](#)), your health is still at risk, as [testing reveals](#) most foods (processed foods in particular) are contaminated with this chemical, and more than 70% of Americans have [detectable levels](#) of [glyphosate in their body](#).

Glyphosate kills weeds by inhibiting the shikimate pathway in the plant, and [Monsanto](#) has long defended the chemical's safety, saying it cannot affect humans because we do not have this pathway. However, the shikimate pathway is found in human gut bacteria, which we now know play a vital role in human health.

Glyphosate has also been shown to:

- Trigger [DNA damage](#).
- Cause [pineal gland pathology](#), which in turn was linked to gut dysbiosis and neurological diseases such as autism, depression, dementia, anxiety disorder and [Parkinson's disease](#).
- Inhibit pituitary release of thyroid stimulating hormone, which can lead to [hypothyroidism](#).
- Act as a substitute for glycine in your body, thereby causing [damaged proteins](#) to be produced. [Glycine](#) also plays a role in quenching inflammation, and is used up in the detoxification process. As a result of glyphosate toxicity, many of us may not have enough glycine for efficient detoxification.
- Chelate important minerals, including iron, cobalt and manganese. Manganese deficiency, in turn, impairs mitochondrial function and can lead to [glutamate toxicity in the brain](#).
- Impair serotonin transport and kill beneficial gut [bacteria](#), thereby contributing to a wide range of mood disorders, including major depression.
- Interfere with [cytochrome P450 enzymes](#), thereby inhibiting vitamin D activation and the creation of both nitric oxide and cholesterol sulfate, the latter of which is needed for red blood cell integrity.

### Glyphosate adds to phosphorous saturation

In related news, research published in December 2018 shows glyphosate is now so widely used that it's contributing to the phosphorous load in agricultural land, and thus to the [phosphorous loading in watersheds](#).

As reported by Phys.org:

"In many agricultural areas, decades of phosphorus-based fertilizer use have led to a saturation of the soil's capacity to hold the nutrient. This increases the likelihood that any additional phosphorus

applied to the land will run off into waterways, where it is a known cause of harmful [algal blooms](#) ...

“Until now, regulations to limit [phosphorus pollution](#) have focused on the use of fertilizers, which remain the largest artificial source of phosphorus. But as the use of glyphosate increases — the past two decades alone have seen global use increase 15-fold — the herbicide’s relatively small phosphorus content starts to add up ...

“Our study argues that the recent and rapid rise in glyphosate use has magnified its relative importance as a source of anthropogenic phosphorus, especially in areas of intensive [corn](#), soybean and cotton cultivation,’ [lead author Marie-Pier] Hébert says.”

### **Biosolids — a most toxic fertilizer**

Last but certainly not least, we have biosolids, more accurately referred to as toxic sewage sludge.

Not only is it notorious for containing industrial waste, loaded with heavy metals, as noted in a Sept. 12, 2019, [AP News article](#), concerns over the use of this toxic fertilizer is now growing because it’s also been found to be a source of [PFAS](#) chemicals.

AP states:

“The concern is that certain PFAS chemicals, which studies have associated with [increased risk of cancer](#) and damage to organs such as the liver and [thyroid](#), could be absorbed by crops grown in [soils treated with polluted sludge](#) and wind up in foods.

“The Food and Drug Administration this year reported finding substantial levels of the chemicals in random samples of grocery store meats, dairy products, seafood and even off-the-shelf chocolate cake ...”

In my 2015 interview with David L. Lewis, Ph.D., a microbiologist who spent three decades working as an Environmental Protection Agency scientist, he reveals the history of biosolids, why it’s a complete scam and how the truth about this toxic fertilizer has been swept under the rug for years.

### **How to safeguard your diet**

As I mentioned at the beginning, phosphate fertilizers, biosolids and glyphosate are just three of many different sources of toxins in our diet.

Once you begin to survey the field and realize just how many different toxic sources there are and the types of questionable chemicals involved, you start to get an idea of why [organic food](#) is growing in popularity.

Many are now starting to realize the many problems associated with conventional foods, which include both health and environmental issues, and are taking proactive measures. The most logical step is to transition to an organic or biodynamic diet, to the degree that you’re able. This goes not just for produce but also for meat and dairy products.

The reason for this is because most conventional cattle are fed an unnatural diet of grains rather than grass, and most of the grain is also genetically modified. So, animal products can actually be even more contaminated than fruits and vegetables. So, remember to buy organic, grass-fed beef, poultry and dairy, as well.

If you live in the U.S., the following organizations can help you locate farm-fresh foods:

- [Demeter USA](#) — [Demeter-USA.org](#) provides a directory of certified Biodynamic farms and brands.

- [American Grassfed Association \(AGA\)](#) — The goal of the American Grassfed Association is to promote the grass-fed industry through government relations, research, concept marketing and public education.
- Their website also allows you to search for AGA-approved producers certified according to strict standards that include being raised on a diet of 100% forage, raised on pasture and never confined to a feedlot, never treated with antibiotics or hormones and born and raised on American family farms.
- [EatWild.com](#) — EatWild.com provides lists of farmers known to produce raw dairy products as well as grass-fed beef and other farm-fresh produce (although not all are certified organic). Here you can also find information about local farmers markets, as well as local stores and restaurants that sell grass-fed products.
- [Weston A. Price Foundation](#) — Weston A. Price has local chapters in most states, and many of them are connected with buying clubs in which you can easily purchase organic foods, including grass-fed raw dairy products like milk and butter.
- [Grassfed Exchange](#) — The Grassfed Exchange has a listing of producers selling organic and grass-fed meats across the U.S.
- [Local Harvest](#) — This website will help you find farmers markets, family farms and other sources of sustainably grown food in your area where you can buy produce, grass-fed meats and many other goodies.
- [Farmers Markets](#) — A national listing of farmers markets.
- [Eat Well Guide: Wholesome Food from Healthy Animals](#) — The Eat Well Guide is a free online directory of sustainably raised meat, poultry, dairy and eggs from farms, stores, restaurants, inns, hotels and online outlets in the United States and Canada.
- [Community Involved in Sustaining Agriculture](#) — Is dedicated to sustaining agriculture and promoting the products of small farms.
- [The Cornucopia Institute](#) — The Cornucopia Institute maintains web-based tools rating all certified organic brands of eggs, dairy products and other commodities, based on their ethical sourcing and authentic farming practices separating CAFO “organic” production from authentic organic practices.
- [RealMilk.com](#) — If you’re still unsure of where to find raw milk, check out Raw-Milk-Facts.com and RealMilk.com. They can tell you what the status is for legality in your state, and provide a listing of raw dairy farms in your area. The [Farm to Consumer Legal Defense Fund](#) also provides a state-by-state review of [raw milk laws](#). California residents can also find raw milk retailers using the store locator available at [OrganicPastures.com](#).

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*The views and opinions expressed in this article are those of the authors and do not necessarily reflect the views of Children's Health Defense.*

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Dr. Joseph Mercola is the founder of Mercola.com.