

The Hidden Dangers of Chemical Fertilizers

Because the damage caused by chemical fertilizers is often long-term and cumulative, it may be wiser to consider alternative and sustainable methods of fertilizing the soil.

By [Laura Buckler](#) | Dec 07, 2017

Chemical fertilizers are important for the cost-effective production of commercial crops, and have been since the 1930s. With a growing population and high cost of living, a bountiful harvest ensures enough food is available for everyone at affordable prices. However, using chemical fertilizers do have their hidden dangers about which most people may not know.

Some may have some vague idea of groundwater contamination and other environmental effects, but not anything in depth. Most people are not aware, for example, that an excessive amount of nitrogen in the soil can kill off fish in nearby bodies of water. To understand these effects, we need to know exactly what chemical fertilizers are and how they work.

(This guest post was written by Laura Buckler, freelance writer and manager from [Essays Scholaradvisor](#).)

Why Use Fertilizers?

The purpose of any fertilizer is to increase the amount of nutrients in soil that make it more fertile and friendly to plant growth. Typically present in fertilizers are one or more of the macronutrients nitrogen, phosphorus, and potassium, or NPK. Any one of these is pretty much all a plant needs to grow, and grow fast. Other nutrients may also be present, depending on the source.

There are two main types of fertilizers, organic and chemical. As the name suggests, organic fertilizers come from organic sources such animal manure and plants. They tend to be hit-and-miss unless processed carefully, in which case they tend to be expensive. Chemical fertilizers come from inorganic materials, which undergo chemical treatments. The formulations are precise and deliberate, depending on its intended use, and they are relatively cost-effective.

At face value, you might think that chemical fertilizers give farmers more control over their crop production at the right price. You would be right, but you would also be wrong. Chemical fertilizers do allow farmers to produce more and/or high-quality crops in the short-term, but may lead to fewer or poor quality crops in the long term. This is because of the intricacies of soil health.

Much like humans, the soil needs a delicate balance of nutrients to remain healthy. While NPK can definitely help plants and crops grow, simply adding them to the soil without regard for keeping the balance can lead to unintended consequences or hidden dangers.

Environmental Issues

One of the problems with chemical fertilizers is they seep through the soil into the groundwater and other water sources, leading to contamination. Now, NPK in small quantities is non-toxic, but a lot can kill the balance of nature in various ways. Nitrogen is especially tricky.

One way is by doing exactly what it is supposed to do, which is help plants grow. The problem is it creates what experts call a **dead zone**. When it is in the water, it encourages the growth of plankton and other aquatic plants to excessive amounts. When they die, the process of decomposition eats up oxygen that fish and other aquatic animals need to survive. As a result, the waters closest to the land where agricultural runoff is also heaviest are empty of fish and crustaceans. This upsets the ecosystem of the area and the local fishing industry.

It would not help much to stop using chemical fertilizer in the worst hit areas. Nitrogen in the water can persist for many years, so it will continue to affect the environment even without adding more.

Another problem with nitrogen is it contributes to the greenhouse effect. Dubbed the "**other greenhouse gas**," nitrogen is just as bad as carbon dioxide in global warming, but is not as famous. The main sources of nitrogen in the atmosphere in the form of nitrous oxide are power plants and cars, but using more nitrogen fertilizers than crop plants can absorb plays a significant role.

In addition, chemical fertilizers can make the topsoil acidic, because nitrogen lowers the pH of the soil. The ideal pH for maximum plant growth and crop yield is between 5.5 and 8. If the soil is too acidic (pH lower than 5.5), it will yield less crops.

The environmental issues of using chemical fertilizers are bad, and they will take many years to address. However, an immediate concern with chemical fertilizers is the effect on human health.

Human Issues

At the very least, food crops produced using chemical fertilizers may not be as nutritious as they should be. This is because chemical fertilizers trade fast growth for health in plants, resulting in crops that have **less nutritional value**. Plants will grow on little more than NPK, but they will be missing or developing less of essential nutrients such as calcium, zinc, and iron. This can have a small but cumulative effect on the health of people that consume them.

At worst, chemical fertilizers may increase the risks of developing cancer in adults and children and adversely affecting fetal brain development. This is not news to scientists. A 1994 study by the University of Wisconsin suggest show that typical concentrations of nitrate (a common fertilizer) and a pesticide in the groundwater may compromise the nervous, endocrine, and immune system of young children and developing fetuses. **A study** in 1973 associates high levels of sodium nitrate in groundwater with the prevalence of gastric cancer, and **another one** in 1996 with that of testicular cancer.

A relatively recent **study**, however, shows that chemical fertilizers may play a significant role in the development of methemoglobinemia, otherwise known as Blue Baby syndrome. Researchers believe the condition results from feeding the infants with baby formula using well water contaminated with nitrates. The baby literally turns blue and may eventually lead to coma or death.

Chemical fertilizer contamination is not just a danger in rural areas, either. Much of the excess fertilizer originates from cities, applied over residential and commercial lawns and making their way to the water supply. The problem is such that many cities have laws restricting the use of chemical fertilizers in public spaces.

Conclusion

Chemical fertilizers have their uses, but they also have hidden dangers. Whether used in a farm or lawn, applying more than the plants can use to help them grow results in damage to the environment and human health. Because the damage caused by chemical fertilizers is often long-term and cumulative, it may be wiser to consider alternative and sustainable methods of fertilizing the soil.

About the Author

Laura Buckler is a freelance writer and manager at <https://essays.scholaradvisor.com/>. She has a different perception of the world. She believes people should realize how much potential they have, so she helps them understand that. You can find her at https://twitter.com/laura_buckler on Twitter.

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