

Is it safe to compost paper products?

Paper is an organic material, having originated from living trees, and can be a good source of carbon ("brown" material) for the compost pile. Paper is abundant in homes and offices, and since many urban dwellers lack sufficient sources of carbon for a well-balanced compost system, paper can be used in place of, or in addition to, leaves and grass clippings. Paper can improve the quality of compost, acting as a wicking-agent for water and thus reducing irrigation requirements and nutrient leaching.

There are concerns, however, about the safety of the bleach used to whiten paper, inks and glosses used to add color and print, and glues used to assemble cardboard boxes. Since I have been using paper products in my own vermicompost and outdoor compost systems, I decided to dig a little deeper to find out just how safe paper is in our soils. Below is a summary of what I found:

Bleach

Elemental chlorine was the primary chemical used for bleaching paper before 1990. Chlorine binds with lignins, the structural cells in trees, which results in the formation of dioxins and other toxic chemicals. These toxins, which do not break down in water, bioaccumulate as they move up the food chain, causing cancer and other health concerns in humans.

Fortunately, in the US and Canada, the use of elemental chlorine has been phased out and replaced mostly by chlorine dioxide. Chlorine dioxide bleaching, which is referred to as Elemental Chlorine-Free (ECF) bleaching, greatly reduces the production of dioxins, but does not completely eliminate them. Better yet are papers whitened using oxygen, peroxide or ozone, which eliminate chlorine altogether. These papers are referred to as Totally Chlorine Free (TCF) or Processed Chlorine Free (PCF), the latter of which includes recycled material.

Heavy metals and petroleum in inks

In the past, inks were made from petroleum-based solvents; however, today in the US, most inks are made of soy or other vegetable-based oils. Additionally, the composting process actually converts hydrocarbons, which are the primary components of petroleum, into harmless matter, and has been used in the bioremediation of sites contaminated with petrochemicals.

Lead printing plates have been banned for over 25 years, and paper produced in the US is lead-free. Other heavy metals in inks are far below the EPA 503 rules. Beware, however, when composting older books and paper from other countries where lead printing plates are still in use, as these can contain heavy metals, and keep in mind that imported products have imported packaging that may not follow US guidelines for processing. Cardboard and paper containing fluorescent or metallic inks can also contain heavy metals and should be avoided.

Gloss

The glossy coating on most shiny paper is made from kaolin clay. The gloss may slow down the decomposition of the paper, so it is best to finely shred it before adding it to the compost pile.

Glue

The glue used to hold most corrugated cartons together is made from potato or corn starch and is safe and biodegradable. Plastic tapes used to seal boxes, of course, are not biodegradable, and should be removed before adding cardboard to the compost pile, or filtered out and discarded after compost is finished.

Recycle or Compost?

When you compost paper rather than recycling it to make new paper, new trees must be cut down to replace the paper removed from the system. If you have access to sufficient brown yard wastes, then it is more environmentally friendly to recycle your paper than to compost it. Paper soiled with food, however, such as compostable plates, napkins, coffee filters, teabags and pizza boxes, cannot be recycled. Therefore, rather than adding this waste to landfills, add it to your compost to enrich the soil. And the most environmentally friendly choice in either case, of course, is purchasing unbleached, recycled paper products.

It is unclear, however, how China's January 2018 ban on many forms of foreign trash will affect mixed-paper recycling in the US. The United States does not currently have the capacity to recycle all of the paper and other materials that consumers place in their recycling bins. We will need to either clean up our act and reduce the amount of contaminants in the materials we are sending to China to be recycled, or increase the capacity of materials that we are able to recycle here in the US. In the meantime, some cities have stopped collecting curbside recycling altogether, and residents are forced to put recyclables into their trash bins. In this case, composting paper is a viable alternative to sending it to the landfill.

Summary

In conclusion, paper can be a good source of carbon for the compost pile, and can improve the overall structure of your garden soil. Studies have actually shown that paper contains very low levels of harmful contaminants, and that most paper contaminants not only are much lower than the EPA requirements for the use of biosolids, but comprehensive testing has also found that contamination of paper is often lower than that of municipal yard waste, which can contain pesticide residues.

While bleaching processes have become much safer in the last 20+ years, if you are worried about the potential accumulation of dioxins in your soils, it is best to purchase TCF, PCF or unbleached paper for use in your household and compost systems. The same goes for heavy metals, petroleum-based products, glossy paper and glue; while most of these papers are made using safe, food-based materials, if you are in doubt, leave it out.

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