

## Small Leaf Fires Can Cause Big Pollution Problems

### How bad can it really be?...

The amount of toxins released from uncontrolled low temperature burning in backyards depends on the composition of the waste being burned, the temperature of the fire and the supply of oxygen.

The major problem with backyard burning is that it is rarely carried out at high enough temperatures to destroy toxic substances. Under calm weather conditions toxins released from this type of uncontrolled low temperature burning can remain at dangerous levels near the ground for a long time, causing high amounts of contamination at source. Below is a list of pollutants that can potentially be generated by uncontrolled low temperature burning:

1. Dioxins and furans, some of which are classified as carcinogenic (i.e. they can cause cancer).
2. Volatile organic compounds (VOCs), which can aggravate respiratory and heart illnesses and lead to kidney and liver damage. They also contribute to the formation of ground-level ozone (photochemical smog).
3. Polycyclic aromatic hydrocarbons (PAHs), which are generated when elements of municipal waste are not completely combusted. PAHs are known carcinogens.
4. Carbon monoxide (CO), small amounts of which can cause nausea and headaches when inhaled. CO contributes to the formation of harmful low level ozone.
5. Hexachlorobenzene (HCB), which has similar properties to dioxins as it is persistent and builds up in humans and the environment. At certain levels of exposure it may cause serious health problems such as cancer, kidney and liver damage.
6. Nitrogen oxides (NOx), which contribute to acid rain and the formation of ground level ozone. Short term exposure to very high concentrations of Nitrogen Dioxide (NO<sub>2</sub>) can result in adverse effects on the respiratory system.
7. Microscopic particles, which can be small enough to get deep into our lungs. They are associated with health problems including bronchitis, asthma and heart attacks. People who already have respiratory or heart problems, the elderly and infants are most at risk when exposed to these particles. These particles are known to transport dioxins in the environment.
8. Ash, which may contain mercury, lead and arsenic. These are toxic to humans and animals when consumed, causing heart problems, kidney and brain damage. If deposited in the garden, vegetables can accumulate them and they can then be passed onto humans when eaten
9. Leaf usually contain moisture which makes it burn slowly and thus generates a lot of airborne particles. - fine bits of dust, soot and other solid materials\
10. According to Wisconsin's Department of Natural Resources, these particulates can reach deep into lung tissue and cause coughing, wheezing, chest pain, shortness of breath and sometimes long-term respiratory problems.
11. These symptoms can occur several days after the burning has taken place.
12. Leaf smoke contains carbon Monoxide – which binds with the haemoglobin in the bloodstream and reduces the amount of oxygen in the blood
13. It also contains Benzo (a)pyrene which is known to cause cancer in animals and is believed to be a major factor in lung cancer.
14. According to U.S. Environmental Protection Agency studies, sometimes concentrations of air pollutants resulting from leaf burning can be so high that the air does not meet federal health standards. In fact, in some areas burning of leaves and brush sometimes causes much higher levels of air pollution than all other forms of air pollution combined (such as factories, vehicles, and lawn and garden equipment).

