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NEWS FROM THE WONDERFUL WORLD OF SOIL AND PLANTS

By John Ferguson

Subject: fire danger of mulch, warning signs of a bad mulch

The excellent tree company Arbor True shared an article above about tree care for winter and mentioned mulches several times.

Something most of us do not think about is Fire Danger from our mulch. This time of year, fires are in fireplaces, fire pits, barbeque pits and many other possible sources.

Over the last few years there have been a lot of wildfires in the USA and thousands of homes destroyed (ex. Bastrop, Texas 2011). Fires in California and Canada this past year to name a few.

In many cases it was not the roof that caught fire, but the mulch in the landscape. The mulch ignited and then carried the fire to the house.

Often mulch is set on fire by still burning embers from forest or grass fires brought in by the wind, cigarettes are a common ignition source, lightning is a possible source, static electricity and even a broken bottles can focus the sunlight and cause a fire.

Known Fire Ignition Sources

- Cigarettes
- Sparks (fireplace, bar-b-que pit, fire pit)
- Embers (burning house or wildfire)

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- Lightning
- Static Electricity
- Wiring (electrical shorts)
- Reflected heat from low-E windows
- Matches and lighters
- Broken bottles
- Spontaneous
- Sparks from accidents

How often do we see scenes like this where cigarettes are dumped on a highly flammable mulch? This shredded mulch was a very poor choice since it is near a smoking area.



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Below is an example of how an ember could catch the easily flammable dyed mulch on fire, which could then catch the fence on fire and travel to the house.



As a result of all the homes that were burned, several universities decided to study the flammability of mulches and how they might contribute to house fires.

They used a Propane Torch and *fifteen seconds* of intense heat and flame were applied to each mulch sample then the torch removed. The tests were performed one year after installation of mulch.

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Some of the things that were discovered were surprising, as even some of the organic mulches would not ignite.

Just using a match (no propane torch), the ignition of Rubber Chipped Mulch occurred every time.

Fire in chipped rubber mulch which is made from recycled tires, gave off toxic fumes, could not be extinguished with water (water spreads the flames and makes it worse). It required extinguishing by beating out with a shovel or special chemical foams that are toxic themselves.

Tests from the demonstrations found that the Dyed and Shredded Hardwood Mulch caught fire every time. The chart below lists the other results.

OUR IGNITION RESULTS

<input type="checkbox"/> OAT STRAW	VERY HIGH
<input type="checkbox"/> PINE STRAW	VERY HIGH
<input type="checkbox"/> GROUND RUBBER TIRES (DYED)	VERY HIGH
<input type="checkbox"/> DYED MULCH/PALLETS	VERY HIGH
<input type="checkbox"/> SHREDDED PINE BARK, CYPRESS, or HARDWOOD--	HIGH
<input type="checkbox"/> YARD COMPOST	MEDIUM
<input type="checkbox"/> PINE BARK CHUNKS-TWO SIZES	LOW
<input type="checkbox"/> TURF	VERY LOW
<input type="checkbox"/> COCOA HULLS	VERY LOW
<input type="checkbox"/> NATIVE MULCH (Composted)	VERY LOW

Some of the slides and data were from studies on mulch and fire conducted by the University of Nebraska and the University of Florida.

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I often hear of folks commenting that the mulch they purchased stinks.

Warning Signs of a Bad Mulch

ODORS: Odors are warning signs of low quality and potentially dangerous mulches and composts.

1) Anaerobic organic acids that have a strong odor from the putrefying organic matter. The odor varies depending on feedstock or material and what is going on, however they are all very bad. Plant roots are very sensitive to alcohols *as little as 1 ppm will kill most plant roots*. A few common ones are:

Acetic acid - vinegar smell, loss of nitrogen and phosphorous, alcohols present

Butyric acid - sour milk smell, alcohols present

Valeric acid - vomit smell, alcohols present

Putrescine - rotting meat smell, alcohols present

2) Ammonia – implies an immature compost or mulch which will be phytotoxic, and the nitrogen is being lost to the air.

3) Rotten egg (H_2S) - implies an immature compost or mulch which is phytotoxic, and signals a loss of the nutrient sulfur.

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