

## MULCH CORNER

### THE FIRE RISK RELATED TO THE COMBUSTIBILITY OF MULCHES

*by John Ferguson*

This past week driving around town I noticed several grass fires related to the hot weather and drought. With the 4th of July holiday weekend upon us with fireworks celebrations, bar-b-ques, etc. I felt it was appropriate to talk about the fire risk related to the combustibility of mulches. We often overlook this risk factor in choosing our mulches.

A number of years ago I was on vacation and driving along the Oregon coastline when I passed a landscaped intersection where the mulch was on fire. Black smoke was pouring off of the area and the fire trucks were pumping water on it and could not put it out. Being curious I stopped and asked what was going on. The fire fighters told me the highway department had used a mulch made from shredded tires and that it had gone into spontaneous combustion.

After this incident I decided to research this topic and read through hundreds of pages of test reports and the following is some of what I have learned.

The tests were done in hot dry areas that are regularly subject to wildfires and some used different species than what grows in our area (e.g. Western Red Cedar versus Eastern Red Cedar), but one can reasonably expect similar behavior. Mulches were tested for flame height, rate of fire spread, and maximum temperature.

Shredded rubber mulches ignited on every test, burned the hottest with the greatest flame heights reaching over 3 feet. The rubber mulches also gave off toxic fumes and could not be extinguished with water (water actually spread the flames faster).

Pine needles were second only to rubber tire mulches in terms of the cumulative dangerous fire behavior. Cedar mulches demonstrated the most rapid rate of fire spread traveling with a rate 47.9 feet per minute. One test showed that pine straw and pine nuggets produced some of the highest flame temperatures.



Wood mulches made from pallets and other dry wood like construction wood waste (i.e. colored mulches) ignited and burned on every test and were one of the most dangerous.

Wood chips treated with fire retardant chemicals delayed the spread for 5-10 minutes then behavior was similar to untreated wood mulches.

With the ban on indoor smoking special attention should be given to commercial buildings. Smokers tend to gather near outdoor landscaped areas with mulch, hence they pose an additional risk if mulches of high flammability are used. It was recommended that colored mulch, rubber mulch, shredded pine or cypress mulch should not be used where cigarettes may be discarded.

Composted wood mulches (native mulches) demonstrated the least hazardous fire behavior. They never flamed and only smoldered even when exposed to a direct flame. During the composting phase of producing these mulches the piles get very hot for periods of months if done properly. The carbon contained in the branches and limbs is used up by the microbes as their food or energy source. When carbon is combined with oxygen, energy is released (burning wood in a fireplace for example). During the composting process some of the carbon is combined with oxygen from the air and released as carbon dioxide gas and some of the carbon is combined into long stable carbon chains that we call humus. As a result there is not a lot of carbon in the right form to burn. Hence, not only is composted native mulch the best from a horticulture point of view and one of the best looking mulches, it is also one of the safest!

Note: Spontaneous combustion of mulches used in landscaping did not occur due to the thin layer. However a large pile of mulch on ones property can go into spontaneous combustion if not managed properly.

This information came from reports published by the following and several others:

Ohio State University Cooperative Extension  
University of Nevada Cooperative Extension  
University of California Cooperative Extension  
University of Arizona, College of Agriculture