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## JOHN'S CORNER

### GARDENING Q&A:

*by John Ferguson*

*My name is LaShonda Potter. I had a few questions in regards to rubber mats or rubber mulching. My 18 month old son received 1st degree burns yesterday from standing on a rubber hump looking thing at the park yesterday. I was wanting to know if any testing is done as to how hot these things get? In the sun/shade? My son was playing at the splash park with his siblings and decided to to to the slide where the rubber mat was located. He couldn't get off of it and I couldn't get to him fast enough to keep him from burning his feet. I didn't realize hot hot it was until I put my own bare foot on it. Are they tested for safety at all? All the mat companies have told me is "of course anything left in the sun will heat up" but to what extent of heat up are they talking about?! We're there warning signs or warning labels put on these things? Are they required to have labels? As a mom of 4 and this being my youngest I never expected this to happen. It has NEVER happened to any of my other barefooted babies.*

#### ANSWER:

LaShonda, You have very valid concerns. I suspect very little to zero testing is done.

Several issues come to mind that makes testing difficult as they vary greatly:

- 1) From physics we know that dark color objects will absorb more of the energy in sunlight than a light colored object, hence it gets much hotter. That is why on two cars parked side by side and in the sun for a couple hours, where one is white and the other is black, you can put your hand on the white one without problems however if you touch the black one it can burn you.
- 2) Sunlight is more intense in the South than in Northern states hence objects in the sun get much hotter.
- 3) Rubber is a relatively dense product thus it has the ability to hold a lot of heat energy and become very hot. Due to its density it can transfer a lot of heat energy very quickly to our skin causing burns. The longer the rubber object sits in the sun the more energy it absorbs and the hotter it becomes. Once a certain point is

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reached materials become so hot that they cannot absorb any more energy and they start radiating it off as heat energy.

4) An object placed on black asphalt parking will absorb more heat quicker than an object on white concrete and far more than on bare ground or grass. There is additional heat and reflected sunlight, hence these type factors affect how hot an object will get.

5) Other factors are is there enough wind to help remove heat energy from an object and disperse it. Also if the object has been painted, the color of the paint will affect how hot it will become.

6) The angle of the sun due to the season is another factor. Like now (June) when the sun is almost directly overhead at noon, the sunlight is most intense, hence objects become hotter and much quicker. In December when the sun is at a lower angle in the sky, there is a lot more atmosphere to pass through which absorbs some of the energy hence less energy reaches the object and it does not become as hot.

As a result of the above factors, a product that works fine in Chicago or New York where it may have been tested, may become too hot in Texas.

Your e-mail mentioned rubber mulching. Rubber mulch share the above and is very toxic and generally bad for the environment. In our gardening newsletter I talked about rubber mulch last year which I reprinted for you below.

I also attached a handout I did after Hurricane Katrina in New Orleans where vendors selling rubber mulches were claiming termite infested mulch was being shipped from New Orleans to Houston (false claim) and gardeners needed to purchase rubber tire mulch to protect themselves.

#### **MULCH CORNER - Other Inorganic Mulches- Rubber Tire**

Crushed Tires (loose tire chips) -

Rating: Extremely Poor quality

Application: Apply 3-6" deep

Pros: Tested in agriculture, decomposes very slowly, reduced weed growth of 86% in field tests when compared to unmulched soil. Available in several colors.

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Cons: Limited availability and very expensive, increases heat index (gets so hot it can burn plants), can cause extremes of wet and dry conditions, some studies show possible higher disease problems, USDA tests show excessive leaching of Zinc causing severe phytotoxicity in acid soils and will contaminate soils with other tire components.

Other tests around the world have confirmed USDA research and have shown that as little as 5% ground tire rubber in potting media is toxic to petunias and Impatiens ["Communications in Soil Science and Plant Analysis, 27 (13 & 14), 1996]. Tests at Colorado State University found that growth of geraniums grown in media with tire chips were lower than with traditional media [HortScience 32(4):674-676, 1997]. Additional research at Iowa State and Mississippi State has also found decreased growth and other problems when used in a potting mix with Geraniums and Poinsettia plants [HortScience, Vol 32(5), August 1997]. Some of the dyes used to color tire chips may be toxic.

Several reports of spontaneous combustion when applied too thickly. Often sinks into the soil due to its higher density when compared to organic mulches. Note: Works best on poor, unhealthy alkaline soil. Can cause permanent damage to your soil. Try to avoid, for very special cases only.

Crushed Tires (pressed and glued tire chips) - Several gardening magazines are advertizing weed block mats made from old tire chips. These are mulch mats made from tire chips that have been glued together by heating or by use of a chemical binder. The chips are pressed into 1-2" thick mats and cut into a variety of shapes and sizes such as circles to place around shrubs and trees. These mats are laid down as a mulch and weed block. They are advertised as allowing air and water to pass through the mat but prevent weeds from penetrating. The black color of the tire chips will increase the heat index and the tire chip mats will most likely suffer from the problems of plastic mulches. Also the same type of chemical leaching and phytotoxic effects are to be expected as from chipped tires since they are made from the same feedstock material.

I hope all this helps, John

For more information on rubber mulch visit

<http://www.natureswayresources.com/DocsPdfs/RubberMulch.pdf>

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