My Supplemental report on Playscapes/Playhouse/Equipment in setback areas or required yards.

After further research following the 50 min long subcommittee meeting, I can only support having some playscapes located in residential setback areas or required yards under the following conditions.

1. Height of playscape does not exceed 11 ft. (Tallest playscape found on Home Depot website)
2. The playscape is located no closer than 6 ft 6 in to any fence, building or obstacle.
3. The fall distance does not exceed 8 ft. (Beyond this distance wood mulch or wood chips are not recommended but shredded rubber is per Outdoor Home Playground Safety Handbook and shredded rubber is very bad for the environment. See article below.)

Playscape is defined as an assembly of components sold as a kit and is installed on site. It is characterized as mostly open to the sky, is not installed on a concrete slab and usually will not alter or impede stormwater runoff.

I define a playhouse as a customed built structure and is an accessory building. It may be built using concrete footings or on a concrete slab which along with its' roof, or floor if two level, could alter the site drainage, and cause a problem. Being built of wood like a house they weight more than playscapes and could interfere with access to utilities easement and restrict all the elements for which cities have adapted setback areas or required yards.

Reasons for unrestricted setback areas are to enhance sunlight, air circulation, fire protection, privacy, manage stormwater runoff, as well provide space for trees and shrubs which in turn can increase aesthetics and mental wellbeing. Perhaps most importantly is the probability that the lot's property value will decrease if required yards area are decreased.

Playhouses are currently specifically prohibited from required yards in our city ordinance. As you know, this permitting process is slow and long, involves public hearings, majority approval and as such should not be altered without careful consideration.

I would not advocate for changing the ordinance for one case but would ask building official to see if an alternative location on the site would work and even a slight encroachment (but no closer than 10 feet to property line nor in an easement) would be better than a complete encroachment. It would set a bad precedent to ignore current ordinances.

Equipment such as outdoor a/c units, pool pumps, generators should not the closer than 10 ft to side property lines, screened from public view and not located in front yard which includes nonrequired front yard. They should also not be located in required rear yard. This type of equipment should be shown on building plans for review and approval.

I believe protecting the openness of the required yards, which are becoming the only yards, preserves to the extent it can "Rollingwood's character" which in turn enhances everyone's property values.

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The Myth of Rubberized Landscapes

"Recycled rubber mulch is an environmentally friendly, non-toxic choice for landscapes"

The Myth

Discarded rubber tires are the bane of waste management; according to the EPA, we generate 290 million scrap tires annually. Scrap tire stockpiles can pose significant fire hazards, such as the 1983 Virginia tire fire that burned for 9 months. Obviously finding a market for these slow-to-decompose materials is desirable, and many innovative uses have been developed, including rubberized asphalt, playground surfaces, and landscape mulches. From an engineering standpoint, crumb rubber as a soil amendment has performed favorably in reducing compaction to specialty landscape surfaces such as sports fields and putting greens.

Rubber mulches are touted by manufacturers and distributors as permanent ("doesn't decay away") and aesthetically pleasing ("no odor" - "looks like shredded wood mulch" – "earth tones and designer colors" – "special fade resistant coating") landscape materials. Furthermore, we are told that rubber mulch is "safe for flowers, plants and pets" (though it "doesn't feed or house insects") and "dramatically improves landscaping." It seems to be an environmentally-friendly solution to a major waste disposal problem.

The Reality

Rubber mulches have not proved to be particularly good choices for either horticultural production or landscape uses. In comparison studies of several mulch types, rubber tire mulch was less effective in controlling weeds in herbaceous perennial plots than wood chips. Similarly, sawdust made a better mulch for Christmas tree production in terms of weed control, microbial biomass, and soil chemistry. Another comparative study found rubber to be less effective than straw or fiber mulch in establishing turfgrasses.

Not only do rubber mulches perform less effectively in the landscape, they possess an additional, unwanted characteristic. Compared to a dozen other mulch types, ground rubber is more likely to ignite and more difficult to extinguish. In areas where the possibility of natural or man-made fires is significant, rubber mulches should not be used.

"Permanence" of rubber mulch

Far from being permanent, rubber is broken down by microbes like any other organic product. Many bacterial species have been isolated and identified that are capable of utilizing rubber as their sole energy source. Such bacteria have been found in a variety of environments, including the cavity water of

discarded tires. Although some of the additives used in tire manufacture are toxic to rubber-degrading bacteria, there are white-rot and brown-rot fungal species that can detoxify these additives. While isolating these microbes has been beneficial in developing natural mechanisms to recycle rubber products, it also points out the fallacy of assuming that rubber mulch is "permanent." Furthermore, it alerts us to the very real possibility that car tires leach toxic compounds into the landscape.

"Non-toxicity" of rubber mulch

Current research at Bucknell University indicates that rubber leachate from car tires can kill entire aquatic communities of algae, zooplankton, snails, and fish. At lower concentrations, the leachates cause reproductive problems and precancerous lesions. A similar study exploring the use of tires as artificial reef substrates also found rubber leachate to negatively affect the survival of various seaweeds and phytoplankton. Marine and other saline environments are less sensitive to tire leachates, however, and the greatest threat of contamination appears to be to freshwater habitats.

Part of the toxic nature of rubber leachate is due to its mineral content: aluminum, cadmium, chromium, copper, iron, magnesium, manganese, molybdenum, selenium, sulfur, and zinc have all been identified in laboratory and field leachates. If rubber products have been exposed to contaminants during their useful lifetime, such as lead or other heavy metals, they will adsorb these metals and release them as well. Of these minerals, rubber contains very high levels of zinc – as much as 2% of the tire mass. A number of plant species, including landscape materials, have been shown to accumulate abnormally high levels of zinc sometimes to the point of death. One USDA researcher who has studied zinc and other metals in soils and plant materials for decades strongly believes that ground rubber should not be used "in any composting, or in any potting medium, or casually dispersed on agricultural or garden soils" because of zinc toxicity. Acidic soils and aquatic systems are particularly sensitive, since heavy metals and other positively charged elements are less tightly bound to the soil and more available to plant and animal uptake.

Rubber leachates are complex solutions. They include not only the minerals and organic building blocks of rubber, but also various plasticizers and accelerators used during the vulcanizing process. In high enough concentrations, some of these rubber leachates are known to be harmful to human health; effects of exposure range from skin and eye irritation to major organ damage and even death. Long term exposure can lead to neurological damage, carcinogenesis, and mutagenesis.

Some of these materials break down quickly, while others are known to bioaccumulate. One of the more common rubber leachates is 2-mercaptobenzothiazole, a common accelerator for rubber vulcanization. In addition to its known human health concerns, it is highly persistent in the environment and very toxic to aquatic organisms: its environmental persistence may cause long-term damage to aquatic environments constantly exposed to rubber leachates. Another family of organic leachates under scrutiny are the polyaromatic hydrocarbons (PAHs). These compounds, used as rubber softeners and fillers, have been repeatedly demonstrated to be toxic to aquatic life. PAHs are released continually into

solution, and after two years in a laboratory test leachates were shown to be even more toxic than at the study's inception.

It is abundantly clear from the scientific literature that rubber should not be used as a landscape amendment or mulch. There is no question that toxic substances leach from rubber as it degrades, contaminating the soil, landscape plants, and associated aquatic systems. While recycling waste tires is an important issue to address, it is not a solution to simply move the problem to our landscapes and surface waters.

The Bottom Line

- Rubber mulch is not as effective as other organic mulch choices in controlling weeds
- Rubber mulch is highly flammable and difficult to extinguish once it is burning
- Rubber mulch is not permanent; like other organic substances, it decomposes
- Rubber mulch is not non-toxic; it contains a number of metal and organic contaminants with known environmental and/or human health effects

For more information, please visit Dr. Chalker-Scott's web page at http://www.theinformedgardener.com.