Crumb Rubber for Artificial Turf: The Effects of Herbs on Environmental Runoff

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Black Rubber, commonly found in tires and crumb rubber, is known to have carcinogenic materials and compounds such as polycyclic aromatic hydrocarbons and heavy metals. Crumb rubber is recycled rubber and made from used tires, this rubber still contains all toxic materials found in the typical black rubber from tires. However, crumb rubber is now being used to lay down on turf fields and even as foundations for children's parks. Runoff of water can deposit this turf into local water systems and allow the turf to enter into local watershed. This experiment was designed to determine if herbs could be used to phytoremediate the water and remove the heavy metals. Lead levels extracted by the herbs, particulary celery, were above the safe drinking limit determined by the EPA. With more celery, even more lead could be extracted from the water because of the increase in cells for metals to bind to. Exposure to heavy metals is extremely dangerous because they take the place of important minerals in the body which, in turn, blocks important bodily functions from taking place and can cause toxic buildups. Cadmium can cause a loss of bone density, a weakening of the immune system, pneumonitis, and many other ailments. Lead poisoning can cause extensive kidney damage and slowing of neurological impulses. Exposure to these heavy metals should be extremely limited.

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