Crumb Rubber for Artificial Turf: The Leaching of Heavy Metals into Blood Systems

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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 black 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. Abrasions or open wounds caused on the fields allow for the turf to be exposed to blood where the metals and other chemicals can leach into the blood. This experiment was designed to determine what heavy metals were present in the crumb rubber and whether or not the chemicals leached into blood when exposed and if the results varied on temperature. Cadmium and copper were detected in the turf granules and it was found that through continued exposure, more of the heavy metals were found to leach into the blood and through higher temperatures leaching occurred at a faster rate. Through continued tests of an 18 hour exposure period it was found that the heavy metals became more concentrated in the blood as time progressed but could be detected early in the exposure period. Heavy metal exposure is extremely dangerous to the human body, heavy metals take the place of important minerals in the body blocking important body functions and also causing toxic buildups in the body. Exposure to these heavy metals should be extremely limited.

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