

ROOF MATERIAL CONTAMINATES AND THE WATER QUALITY OF RAIN HARVESTING SYSTEMS

There is a study by P. C. Van Metre and B. J. Mahler

(http://www.thecenterforrainwaterharvesting.org/2_roof_gutters3.htm) in Texas, as well as Jurgen Forster in Germany, that suggest that the fillers, texture gravel and asphalt of roofs reduce heavy metals and PAH runoff. PAH's are Polycyclic Aromatic Hydrocarbons. There are about 100 chemicals that fit this category. Most are carcinogenic and tend to be made from two to six benzene rings. The 2 and 3 ring PAH's are usually from raw organic materials like oil, coal and decomposing organic material. The 4 and 5 ring PAH's are from burning organic materials like forest fires, home heaters, engine exhaust and even meat on your grill. It was widely thought that PAH's were coming from deteriorating asphalt shingles on homes (2 and 3 ring PAH's) Metre and Mahler have evidence that the PAH's coming off asphalt roofs are no more than what comes off a metal roof. This suggest that PAH's are deposited on roofs and not sourced from roof material deterioration.

Rain barrels can be a first step in promoting water conservation and storm water runoff in communities. Many homeowners and community gardens use harvested rain barrel water to irrigate vegetable gardens, yet limited information exists about the safety of roof runoff for this purpose. In this study (<http://www.nacaa.com?journal/?jid=205>), roof runoff collected in plastic rain barrels was analyzed for presence of several water quality contaminants: lead, zinc, total coliform bacteria, Escherichia coli, and Polycyclic Aromatic Hydrocarbons. Twelve plastic food safe rain barrels were installed on homes that have asphalt shingled roofs, the dominant catchment surface on New Jersey homes. In order to investigate the effects of land use, 6 barrels were located in a suburban community and 6 were in a urban community. Rain barrel water samples were collected in 2011, 3 to 5 days after a rain event. Results showed PAHs were non-detect for all samples. Based on federal and EPA guidelines for water reuse, results for lead and zinc were all below the recommended maximum concentrations and posed minimal risk for irrigating water for vegetable gardens. Results also showed the majority of water samples to be well below the recommended irrigation guidelines for E. Coli. For those who are still concerned about contamination, prior to irrigating a vegetable garden, the water in a typical 55-60 gal., rain barrel should be treated with approximately 1 ounce of bleach, then waiting for about 24 hrs. to allow the chlorine to dissipate, before using the water.

www.rainbarrelman.com