Migration of lead from unplasticized polyvinyl chloride pipes

Al-Malack, M.H.

Journal of Hazardous Materials 82 (3), pp. 263-274, 2001

Abstract: The effect of water quality parameters, such as water pH, temperature, and total dissolved solids (TDS), and direct exposure to UV-radiation on the migration of lead, tin and other metal stabilizers, such as calcium, cadmium, and barium from unplasticized polyvinyl chloride (uPVC) pipes were investigated using locally manufactured pipes. Specimens of 1m were used to investigate the effect of water quality parameters using the circulatory method. To investigate the effect of UV-radiation, specimens of 33cm long were used throughout the research. The investigation was carried out, using the static method at different times of exposure to the UV-radiation. The concentrations of lead, tin, and other metal stabilizers in the water were evaluated using the inductively coupled argon plasma (ICAP) technique. The results on the effect of water quality parameters showed that water pH, temperature, TDS, and time of water circulation were all having an effect on the migration of lead, tin, and other metal stabilizers. On the other hand, exposure to UV-radiation was seen to promote the migration of lead, tin, and other metal stabilizers. A lead concentration of about 0.8mg/l (ppm) was detected after 14 days of exposure to the UV-radiation.