

Effect of solar radiation on the migration of vinyl chloride monomer from unplasticized PVC pipes

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Abstract: The effect of direct exposure to solar radiation on the migration of vinyl chloride monomer (VCM) from unplasticized polyvinyl chloride (uPVC) pipes was investigated using locally manufactured and imported pipes. Specimens 33 cm long were used throughout the research. The investigation was carried out, at different times of exposure, by exposing one part of the specimens to the direct sunlight, while keeping the other part in the shade. The VCM concentration in the water was evaluated using the gas chromatography (GC)/head-space technique. A VCM concentration of 2.5 µg/l was detected after 30 days of exposure in direct sunlight. The original initial VCM concentration in the uPVC was predicted, and the diffusion rate of VCM from uPVC pipes was expressed as a function of time. © 2001 Elsevier Science Ltd. All rights reserved.