An experimental model study to investigate the effect of scale on dispersion characteristics in chlorine contact chambers.

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Abstract

This thesis outlines an experimental research in which Tracer studies were carried out in four geometrically similar models, operated under an equal detention time criterion. The scale effect on dispersion characteristics is investigated to determine how closely the performance of a prototype could be predicted from a laboratory study on scaled down models. A number of parameters and indices are considered in the investigation, some of which are the dispersion number, the normalized variance, the coefficient of dispersion, the Morril index, the index of short circuiting, etc. The effect of scale on each parameter is studied and the interpretation of experimental data is presented.

It was observed from output generated curves that the coefficient of dispersion is influenced by scale. However, the normalized variance and the dispersion number (which are related to each other) are to a large extent, independent of scale, at least for longitudinal basins larger than 5.6 cm width and for all practical detention times.