Abstract

Recently, reports have indicated that significantly higher densities of fecal coliform and/or E. coli have been measured in dewatered cake samples compared to samples collected just prior to dewatering. This has been reported in samples from the United States, Canada, and the United Kingdom. Interestingly, the increase has mainly been associated with centrifuge dewatering, and has often led to indicator densities that exceed target regulatory levels. Several theories have emerged to explain this occurrence, such as: inadequate dispersion of liquid samples which reduces the recoverable indicator population; contamination from the centrifuge or downstream processes; and presence of non-culturable bacteria prior to dewatering followed by their reactivation during dewatering. The objectives of this research were to examine the different theories and provide insight into the mechanisms that explain this phenomenon. Several experiments were performed in which samples were collected from full-scale utilities and in addition, several laboratory experiments were performed. The results seem to indicate that reactivation of non-culturable organisms may be the cause of the sudden increase in densities, although centrifuge contamination could not be ruled out.