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Abstract: Sludge produced during the treatment of wastewater is being used as fertilizer in several Gulf countries. The Water and Sewage Authority of Saudi Arabia has targeted the reuse of the total amount of sludge in the future. However, these sludges should be properly treated before reuse as they contain a large number of pathogens and parasites. Little information is available on the microbial characteristics of sludge produced in wastewater treatment plants operating in this region. Variations in the population densities measured by Standard Plate Count, total coliform, fecal coliform, coliphage, and Clostridium perfringens present in the sludge, were monitored during a one year study at Al-Khobar wastewater treatment plant so that the effect of seasonal variations on the fate of these five indicator microorganisms could be investigated. This paper covers an evaluation of the fate of indicator microorganisms in the drying sludge. Insight gained in this study will be helpful in establishing guidelines for the use of sludge as fertilizer for agriculture purposes.