REUSE OF WATER TREATMENT PLANT SLUDGE
IN BRICK MANUFACTURING

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ABSTRACT:
A large quantity of sludge is generated each year from water treatment plants in Egypt. Disposing the sludge to the nearest water stream is the common practice in Egypt, which accumulatively rise the aluminum concentrations in water and consequently in human bodies. This practice has been linked to occurrence of Alzheimer’s disease. Landfill disposal of the sludge is impractical because of the high cost of transportation and because it depletes the capacity of the landfill. The use of sludge in construction industry is considered to be the most economic and environmentally sound option. Due to the similar mineralogical composition of clay and water treatment plant sludge, this study focused on the reuse of sludge in clay-brick production. The study investigated the use of sludge as partial substitute for clay in brick manufacturing. In this study, four different series of sludge and clay proportioning ratios were studied, which exclusively involved the addition of sludge with ratios 50, 60, 70, and 80 percent of the total weight of sludge-clay mixture. Each series involved the firing of bricks at 950, 1000, 1050, and 1100 °C, giving 16 different brick types. The physical properties of the produced bricks were then determined and evaluated according to E.S.S. and B.S. The results indicated that by operating at the temperature commonly practiced in the brick kiln, 50 percent sludge was the optimum ratio, in the sludge-clay mixture, to produce brick from and 80 percent was the maximum practical sludge ratio. The produced bricks properties were superior to those available in the Egyptian market.