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MICROBIOLOGICAL AND PHYSICAL-CHEMICAL CHARACTERIZATION OF SLUDGE GENERATED FROM WATER PURIFICATION PROCESS OF HUMAN WATER CONSUMPTION IN BRAZIL

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The water treatment plants (WTP) generate waste as residual decanters sludge due producing potable water. In Brazil, wastes generated from sewage treatment station (STS) have more importance than ones from WTP. The sludge releasing into water bodies can cause impairment to physical-chemical quality of water and injury to human health because of high frequency of pathogens. The objective of this study was characterize the sludge microbiologically from three collections of two WTP (A and B) of Londrina, Paraná, Brazil through microbiological indicators as *Enterococcus* spp, Clostridium sulphite-reducing and a pathogen *Salmonella* spp. The multiple tubes technique was used to isolated bacteria. For analyze physical-chemical parameters we used Biochemical Oxygen Demand (BOD), Chemical Oxygen Demand (COD), turbidity, pH, apparent color, according to APHA, AWWA and WEF 2005. The results showed that in WTP-A for collection one, the most probable number (MPN) of microorganism per 100mL was $2,1x10^4$ *Enterococcus* and $1,1x10^5$ clostridium; for the collection 2, it presented absence of *Enterococcus* and $>2,4x10^5$ clostridium; and for collection 3, $1,0x10^5$ *Enterococcus* and $2,4x10^5$ clostridium. *Salmonella* spp. was not detected in any sample analyzed. The BOD was 113,9 mg of oxygen/L, COD of 6184,09 mg of oxygen/L, turbidity of 24000 NTU, pH 6,0 and apparent color of 100000 uH for collection 1. For the collection 2, BOD of 4334,59 mg of oxygen/L, COD (was not determine), turbidity 16800 NTU, pH 6,38 and apparent color of 6000 uH. In collection 3, BOD of 73,3 mg of oxygen/L, COD 2172,20 mg of oxygen/L, turbidity 4370 NTU, pH 6,90 and apparent color of 16700 uH. In WTP-B, for collection 1 we detected absence of *Enterococcus,* $4,6x10^5$ clostridium and $3,0x10^2$ *Salmonella* spp; for collection 2, $1,5x10^1$ *Enterococcus* and $4,6x10^5$ clostridium; and for collection 3 $4,3x10^3$ *Enterococcus* e $1,1x10^6$ clostridium. For collection 1 the BOD was 156,5 mg of oxygen/L, COD 4372,7 mg of oxygen/L, turbidity of 24733 NTU, pH 6,01 and apparent color of 121666 uH. For collection 2, BDO (was not determine), COD 5848,6 mg of oxygen/L, turbidity of 49400 NTU, pH 6,99 and apparent color of 28000 uH. For collection 3, BDO 56,6 mg of oxygen/L, COD of 8363,9 mg of oxygen/L, turbidity of 48800 NTU, pH 6,51 and apparent color of 132500 uH. The microbiological contamination was relevant and high levels of physical-chemical parameters were detected in the decanters sludge, indicating high destructive potential for the environmental and healthy human population.