The study was concerned with removal of organic matters (COD, BOD$_5$ and SS) and color substances from pulp and paper industry wastewater by GAC-SBR system. GAC showed the COD and color adsorption yields under jar-test conditions as 127.00 mg/g of GAC and 248.00 Pt-Co/g of GAC, respectively. Under SBR conditions (full aeration), the COD and color removal abilities of GAC could increase about 3.16% and 1.05%, respectively. The COD and color removal abilities of GAC were decreased after use in the SBR system. The COD and color removal abilities of 10 days-used GAC and 20 days-used GAC were reduced to 49.02 mg/g GAC and 217.09 Pt-Co units/g GAC and 58.82 mg/g GAC and 205.68 Pt-Co units/g GAC respectively. But, after 30 days operation of GAC-SBR system, the COD adsorption ability of GAC was increased to 107.85 mg/g GAC due to the biological regeneration of GAC by bio-sludge. In the SBR system, the impurities of wastewater such as COD, BOD$_5$ could be removed with high efficiency but the color removal efficiency was quite low. The COD, BOD$_5$ and color removal efficiencies of SBR system were about 73.26%, 95.10 and 56.96%, respectively under HRT 1 day. However, when the HRT of the system was increased, the COD and BOD$_5$ removal efficiencies were increased and the color removal efficiency was decreased. The COD, BOD$_5$ and color removal efficiencies of the system under HRT of 10 days were increased to 89.80% and 97.84%, while the color removal efficiency was decreased to 47.63%. GAC in the GAC-SBR system could increase the ability of the system for reduction of both COD and color substances. The COD, BOD$_5$ and color removal efficiencies of the system under HRT of 10 days were up to 90.60%, 97.84% and 52.94%, respectively.