To determine levels of some heavy metals in water, sediment, and muscle, liver, and gill of *Sander lucioperca* in Karataş Lake, Turkey, we studied relationship among physico-chemical parameters, seasons, and fish size. Temperature, pH, dissolved oxygen and EC (electrical conductivity) were measured. DORM 3 and DOLT 4 reference material show good accuracy. In the water, Fe has the highest level, while Cd is lowest. Generally, heavy metal levels increased in spring. Both positive and negative correlations were detected between their content in water and physico-chemical parameters. Results of the heavy metal levels were compared with national and international water quality guidelines. In sediment, Fe was the highest too. In fish, high levels of heavy metals were found in liver of pikeperch, while low levels in muscle and gill samples depending on metal properties. In season, the metal levels were highest in autumn in muscle, in summer in liver, and in winter in gill. Positive and negative relationships were found between metal levels and fish size. Metal concentrations in the muscle of examined fish were compared with Turkish Food Codex and EC standards.