Method for indicator-based detection of picric acid involves taking a sample from a natural object and preparing the sample for analysis. Tests are conducted to determine the concentration of picric acid in the sample. After a water sample is collected from a natural source, it is prepared for analysis by taking an aliquot using a graduated cylinder. A measured aliquot is introduced into contact with a membrane based on a polyelectrolyte complex (PEC) of polystyrene sulfonate (PSS) and polydiallyldimethylammonium chloride (PDADMAC); picric acid molecules are adsorbed onto the surface and within the body of the membrane. The membrane is then removed from the water sample, and the concentration of picric acid is determined visually by comparing the membrane color with color samples.