A procedure for the determination of plutonium in seawater is described. The plutonium is pre-concentrated by scavenging with Fe(OH)$_2$ and Fe(OH)$_3$. This purifies for Ca$^{2+}$, Mg$^{2+}$ and amphoteric elements. The method is based on a new procedure in which the principle of controlled valence is applied. The redox system SO$_3^{2-}$/NO$_2^-$ was used (1) first to reduce to Pu$^{3+}$ and afterwards to oxidize to Pu$^{4+}$. The Pu$^{3+}$ is separated from U and 210 Po by solvent extraction with TIOA – 6-10 M HCl. Followed by anion exchange of Pu$^{4+}$ in 8 M HNO$_3$. The decontamination factors of the procedure are $>1.7 \cdot 10^6$ for U and $>6.3 \cdot 10^4$ for Th. The chemical yield is 70-85%.