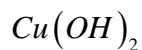**Answer on Question #72291, Chemistry / General Chemistry :**

Calculate the mg of metallic ions that can remain at equilibrium in a Cu(OH)$_2$ solution having an OH$^-$ concentration of 1x10^{-4} mol/dm^3 (K$_{sp}$=1.6x10^{-9})

Solution.

$$Cu(OH)_2$$
$$\left[OH^-\right]=1\cdot10^{-4}M$$
$$K_{sp}=1.6\cdot10^{-9}$$

$$m\left(Cu^{2+}\right)-?$$

Copper hydroxide dissociation reaction:

$$Cu(OH)_2 \leftrightarrow Cu^{2+}+2OH^-$$
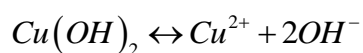
And:

$$K_{sp}=\left[Cu^{2+}\right]\cdot\left[OH^-\right]^2$$
$$\left[Cu^{2+}\right]=\frac{K_{sp}}{\left[OH^-\right]^2}=\frac{1.6\cdot10^{-9}}{\left(10^{-4}\right)^2}=0.16M$$

The weight of copper ions is:

$$m\left(Cu^{2+}\right)=0.16mol/l\cdot1l\cdot63.546g/mol$$
$$m\left(Cu^{2+}\right)=10.167g=10167mg$$

Answer: $m\left(Cu^{2+}\right)=10.167g=10167mg$