15.25 (b) $3.6\times10^{-9}\ \frac{mol\ Ag^+}{L} \times 0.10\ L = 3.6\times10^{-10}\ mol\ Ag^+$

(c) $6.6\times10^{-6}\ \frac{mole\ Ag^+}{L} \times 0.10\ L = 6.6\times10^{-7}\ mol\ Ag^+$

15.27

	$\Delta H°$ (kJ/mol)	$\Delta S°$ (J/mol·K)	$\Delta G°$ (kJ/mol)	K	spontaneous?
KCl	16.9	76.4	-6.0	>1	yes
AgCl	65.5	33.0	55.7	<<1	no
$Cd(OH)_2$	-17.6	-158.1	29.5	<<1	no

15.28 $\Delta G° = -RT\ln K$ $K = \exp\left(-\frac{\Delta G°}{RT}\right)$, so

$$AgCl:\quad K_{sp} = \exp\left[-\frac{55700\ J\ mol^{-1}}{(8.3145\ J\ mol^{-1}K^{-1})(298\ K)}\right] = 1.7\times10^{-10}$$

$$Cd(OH)_2:\quad K_{sp} = \exp\left[-\frac{29500\ J\ mol^{-1}}{8.3145\ J\ mol^{-1}K^{-1}(298\ K)}\right] = 6.8\times10^{-6}$$

15.33 when the can is sealed, the equilibrium:

$CO_2(aq) \rightleftarrows CO_2(g)$ lies to the left.

A sudden reduction of CO_2 pressure drives the reaction to the right.