Question#19742

when potassium cyanide(kcn reacts with acids dealdy poisonous gas, hydrogen cyanide hcn is given of here is the equation. kcn(aq)+HCL(aq)> kcl(aq)+hcn (g) if a sample of 0.140g of kcn is treated with an excess of hcl calculate the amount of HCN formed in grams.

Solution:

According to the equation:

$$KCN + HCl = KCl + HCN$$

$$1\ mol\ KCN\ produce\ 1\ mol\ HCN$$

$$the\ molar\ mass\ of\ KCN\ is: M(KCN) = (39.1 + 12 + 14) * 1\ g/mol = 65.1\ g/mol$$
$$the\ molar\ mass\ of\ HCN\ is: M(HCN) = (1 + 12 + 14) * 1\ g/mol = 27\ g/mol$$

$$\begin{cases} 65.1\ g(KCN) => 27\ g(HCN) \\ 0.14\ g(KCN) => x\ g(HCN) \end{cases}$$

$$x = \frac{0.14*27}{65.1} = 0.058\ g$$

Answer: 0.058 g HCN.