Suppose that 4.5 mol NO 2 and 0.70 mol H 2 O combine and react completely. Which reactant is in excess?

## Solution.

Depending on conditions

1) $3 \mathrm{NO}_{2}+\mathrm{H}_{2} \mathrm{O}=2 \mathrm{HNO}_{3}+\mathrm{NO}$
$\mathrm{n}\left(\mathrm{NO}_{2}\right)=0.7^{*} 3=2.1$ moles
$n\left(\mathrm{H}_{2} \mathrm{O}\right)=0.70$ moles
2) $2 \mathrm{NO}_{2}+\mathrm{H}_{2} \mathrm{O}=\mathrm{HNO}_{3}+\mathrm{HNO}_{2}$
$\mathrm{n}\left(\mathrm{NO}_{2}\right)=0.7 * 2=1.4$ moles
$n\left(\mathrm{H}_{2} \mathrm{O}\right)=0.70$ moles
Answer: $\mathrm{NO}_{2}$

## Answer provided by www.AssignmentExpert.com

