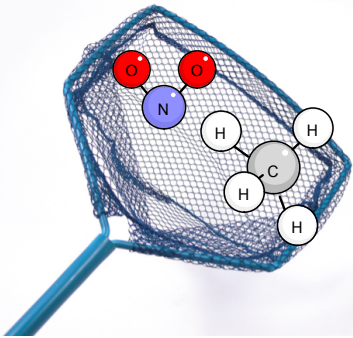



Chem 20 Unit D - Quantitative Relationships in Chemical Changes

## Net Ionic Reactions



Nov 29-11:10 AM



Dr. Martyn Poliakoff  
Proudly Presents:

# The Periodic Table Movie of the Day!!!

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## POS Checklist

write balanced ionic and net ionic equations, including identification of spectator ions, for reactions taking place in aqueous solutions

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## Net Ionic Reactions

Consider the following neutralization reaction:

$$\text{HCl}_{(aq)} + \text{NaOH}_{(aq)} \longrightarrow \text{HOH}_{(l)} + \text{NaCl}_{(aq)}$$

Now, consider this neutralization reaction:

$$\text{H}_2\text{SO}_4(aq) + 2\text{KOH}_{(aq)} \longrightarrow 2\text{HOH}_{(l)} + \text{K}_2\text{SO}_4(aq)$$

How are these reactions the same? Different? What is the really important part of these reactions?

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**In an ionic reaction, like a neutralization, we are really only interested in reaction forming the new product, in this case water. All of the other parts of reaction are just "filler".**

**If we only write the entities in the reaction that are changing and omit the ions that stay the same, we are writing a net ionic reaction.**

**Net Ionic Reaction: shows only entities that change in reaction and leaves out anything that does not change.**

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## Writing a Net Ionic Reaction:

**Step 1: Write out the balanced chemical equation.**

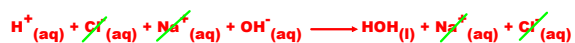
$$\text{HCl}_{(aq)} + \text{NaOH}_{(aq)} \longrightarrow \text{HOH}_{(l)} + \text{NaCl}_{(aq)}$$

**Step 2: Dissociate all high-solubility ionic compounds to show the ions.**

$$\text{H}^+_{(aq)} + \text{Cl}^-_{(aq)} + \text{Na}^+_{(aq)} + \text{OH}^-_{(aq)} \longrightarrow \text{HOH}_{(l)} + \text{Na}^+_{(aq)} + \text{Cl}^-_{(aq)}$$

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**Step 3: Cancel out identical entities that appear on both sides of the reaction arrow.**



Recall, these ions that do not participate are called **spectator ions**.

**\*A Note on Canceling:**

**You can only cancel entities that are exactly the same! Same states, same form (ion, atom, molecule), they must be exactly the same!**

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**Step 4: Write out what is left over, reducing coefficients if needed.**



Let's try another example:

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ex) Write a net ionic reaction for:



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Of course, this works for reactions that are not neutralizations as well:

ex) Write the net ionic reaction between barium chloride and sodium sulphate.

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**Practice: Page 284 #10 - 14**

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