

Topic: Ions and Isotopes

Essential Question: What is an ion and isotope?

An ion is an atom or molecule with a net electric charge due to the loss or gain of one or more electrons.

Electrons are negatively charged therefore they will give an element a negative charge... protons is the atomic number of an element on the periodic table. Neutrons are neutrally charged so they do not give any charge to an element they just add weight to the atomic mass.

There is always the same amount of electrons and protons in an element but if we were to take away 1 electron the element will become more positively charged because electrons are negatively charged and we are taking 1 of those negative charges away from the element to make it more positive but if we were to add more electrons the element will become more negative because we are adding something that is negative to something that doesn't have a charge. When we change the amount of electrons an element has we create something called an ion if we were to add neutrons to an element we will make something called an isotope and remember that adding neutrons doesn't change the charge, neutrons add mass, only electrons can change the charge of an element.... Now if we were to change a proton in an element we would end up changing the whole element because the amount of protons in an element is the atomic number of that one element.

Let's use Carbon as an example, Carbon has 6 protons because its atomic number is 6 it also has 6 electrons with no charge, but if we were to add 1 electron it will look like this C^- but if we were to take 1 electron from the 6 that it has it will look like this C^+ when this happens it will become a ion of Carbon. And if we were to add 2 electrons to Carbon it will become C^{2-} . If we have an element with a positive charge it will be called a cation, if we were to have an element with a negative charge it will be called an anion. If an element has a negative charge it will have an ide at the end of the element so if we were to have Oxygen and add 1 electron to it so it become a negative charge oxygen element it will be called Oxide. If we were to add 1 neutron to an Carbon which has an atomic mass of 12.01 originally the atomic mass will change to 13.01 because we are adding 1 Neutron which has no charge but just mass, this will create an isotope of Carbon.

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