

Unstable Isotopes

All about isotopes

Isotopes can become unstable for a number of reasons – it is because the nucleus of the atom is unstable. An unstable nucleus can be caused by:

- An unbalanced number of protons and neutrons
- Being too large and has too many protons

Isotopes with an unstable nucleus are known as radioactive isotopes. Elements beyond number 82 (lead) on the Periodic Table are radioactive because their nucleus is unstable.

Complete the table below, by identifying the number of protons and neutrons for each isotope:

| Isotope | Number of protons | Number of neutrons | Mass Number |
|------------|-------------------|--------------------|-------------|
| Hydrogen-1 | | | 1 |
| Hydrogen-2 | | | 2 |
| Hydrogen-3 | | | 3 |
| Lithium-6 | | | 6 |
| Lithium-7 | | | 7 |
| Lithium-8 | | | 8 |
| Sulfur-33 | | | 33 |
| Sulfur-34 | | | 34 |
| Sulfur-35 | | | 35 |

Use the ANSTO Atom Builder online, construct the following isotopes and record if they are stable or unstable:

| Isotope | Stable or Unstable | Isotope | Stable or Unstable | Isotope | Stable or Unstable |
|------------|--------------------|-----------|--------------------|-----------|--------------------|
| Hydrogen-1 | | Lithium-6 | | Sulfur-33 | |
| Hydrogen-2 | | Lithium-7 | | Sulfur-34 | |
| Hydrogen-3 | | Lithium-8 | | Sulfur-35 | |
| Lithium-6 | | Sulfur-35 | | | |

