

The most dangerous elements on the periodic table

Watch the video and answer the following questions.

1. From 1952 to 1953, Sydney detectives investigated a _____ number of murder and _____ murder cases that were _____ yet shared a common element: thallium poisoning.
2. The secret to thallium toxicity lies in its structural similarity to potassium — an element that helps _____ the body's fluids _____ muscle contraction, and _____ nerve signals.
3. If even a small amount of thallium _____ its way into the body — for example, through a _____ tea or a slice of cake — it easily _____ potassium, causing the body to slowly and painfully shut down.
4. Lead, for example, _____ places with the body's essential metals like calcium, in turn _____ neuronal communication in the brain. Travelling through the bloodstream, it also _____ toxic levels of molecules known as reactive oxygen species, which over time can stress and kill cells.
5. What is “Mad Hatter” disease?
6. Mercury is quick to _____ with certain parts of proteins found throughout the body. And upon _____, mercury _____ the proteins into different shapes, rendering them useless.
7. Some elements are dangerous because of how they _____, _____, or even _____ in the outside environment.
8. Which column of the periodic table are known as alkali metals? _____
9. This can lead to violent results— pure cesium, for example, bursts into flames when exposed to air, and explodes when dropped in water. Francium is likely the most reactive alkali based on its position in the periodic table, but we don't know for sure. With a _____ of _____ minutes at most, it's thought that less than _____ exists on Earth at any one time.
10. Which elements are perhaps the most threatening elements? _____
11. The substances readily _____ energy, or _____, due to their highly unstable nuclear composition. This reactive nature is what's _____ to create some of the world's most dangerous nuclear weapons.
12. Radioactive elements typically emit energy in the form of _____, _____, _____, or _____.
13. Which radioactive element is particularly hazardous? _____
14. In fact, it's theorised that a single gram of one alpha emitter, polonium, could kill upwards of _____ people. Polonium was first discovered by _____, and tragically her daughter, researcher Irene Joliot-Curie, may have been one of its first victims after she was exposed in a lab accident. Polonium is rare in nature with few commercial uses, so only a small amount is synthesised each year.
15. Thallium, on the other hand, wasn't so difficult to find in the early 1950s in Australia. At the time, Sydney was _____ with chronic rat infestations. And thallium was the main ingredient in the popular and cheap rat poison called Thall-Rat.

ANSWER SHEET

1. Staggering, attempted, unrelated
2. Regulate, initiate, transmit
3. Sneaks, tainted, supplants,
4. Switches, disrupting, generates
5. Mercury's toxicity was made famous in the 19th century due to its widespread use in felt hat production. Prolonged exposure made hat makers ill with what was later known as "Mad Hatter" disease, with symptoms that included personality changes, emotional disturbances, and tremors.
6. Reacts, binding, twists
7. The first column
8. Respond, react, explode
9. Half-life, 22, an ounce
10. radioactive elements
11. Emit, release, decay, harnessed
12. alpha particles, beta particles, neutrons, electromagnetic radiation.
13. alpha particles
14. 50 million, Marie Curie
15. plagued