

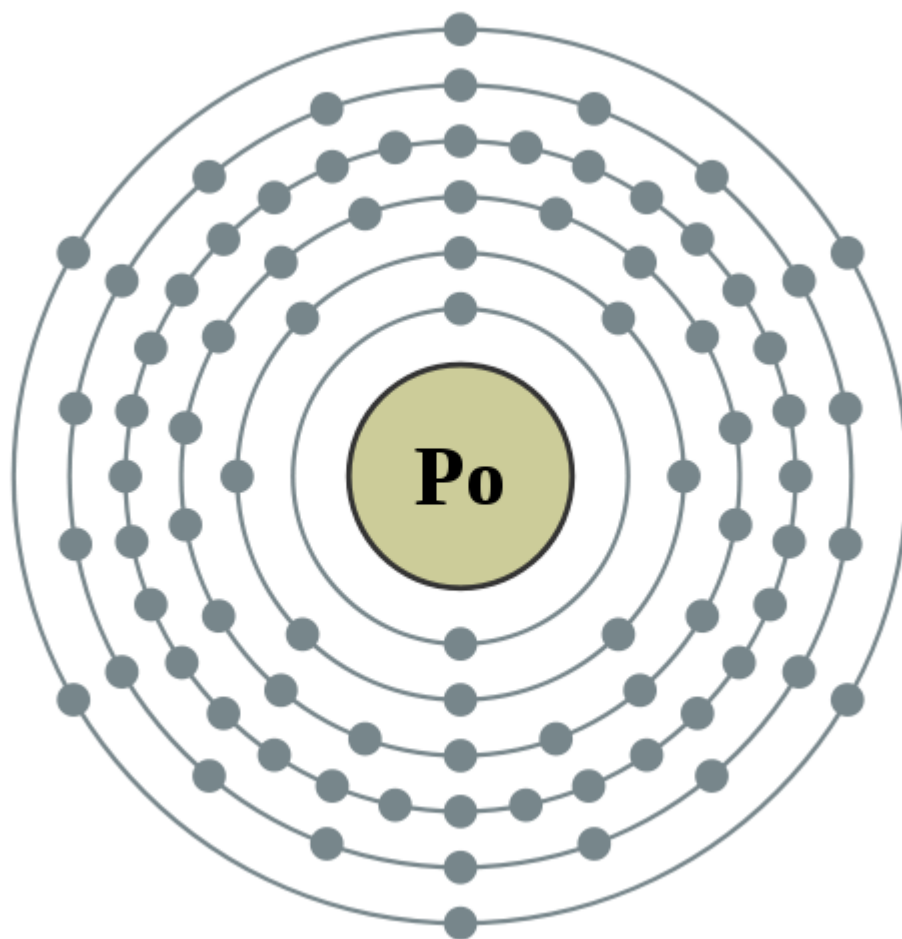
Alexander Litvinenko

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Radioactivity is the spontaneous disintegration of atomic nuclei. It is the process in which unstable atomic nuclei release energetic subatomic particles. Radioactivity can also be referred to as subatomic particles.

Radioactivity was first discovered in 1896 by the French scientist Henri Becquerel. Becquerel discovered that uranium salts were able to blacken a photographic plate placed in the dark, even through a paper barrier. Other experiments distinguished three distinct types of radiation which are alpha and beta particles, and gamma rays.

An example of a radioactive isotope is Polonium-210. The element polonium is found naturally in the environment in tobacco leaves, but its isotope ^{210}Po is where our story begins.



Alexander Litvinenko was a KGB Agent. He was an intelligent man always searching for answers. So when

Russian oligarch, Boris Berezovsky was mysteriously assassinated in November, 1998, Litvinenko was very curious.

On October 31, 2006 he went to his office and overheard Alexey Shiklomanov, his boss, and some colleagues talking about how the assassination went off without a hitch. Litvinenko was appalled and immediately became suspicious of his superiors. It seemed to him as if they were responsible for the Russians death. In fear of getting caught he turned to head back to his office, but was stopped cold. One of the men said "It was a clean kill, but we still need a subject to test the effects of our Polonium-210!"

Horrified, Litvinenko rushed to his office to process what he heard. Stumbling to his computer he looked up Polonium to see what he could find on it. He found out that polonium is usually artificially produced by bombarding bismuth-209 with neutrons in a nuclear reactor which forms bismuth-210 that decays into polonium-210 through beta decay. Searching through different sites he found out more information on similar topics. For example, a nuclear reaction is the process in which two nuclei or nuclear particles collide to produce products different from the

initial particles. He also learned that nuclear stability is the ability of an isotope (an atom with a different number of neutrons) to resist decay or fission. Browsing through sites the words radioactive and nuclear decay caught his eye. He discovered that radioactive decay is a process in which an unstable atomic nucleus loses energy by emitting ionizing particles and radiation. Nuclear decay is similar because it's the emission of alpha, beta and gamma particles. The thought of his co-workers using something so vicious on a human being made Litvinenko's skin crawl.

The seconds dragged on until Litvinenko was free to go at 5:00, and when the time came he rushed out of his office and sped all the way home. He was so eager to tell his wife about what he had heard and found. He opened the door and the smell of chicken wafted from the kitchen. He hurried into the kitchen and his wife immediately knew something was wrong. The words tumbled out of his mouth as he explained what had happened at work. His wife's mind, being the journalist she was, immediately planned out the story she could publish. They both decided that the public deserved to know the truth about his colleagues.

Mrs. Litvinenko stayed up all night composing her story, and it was published the next day. News shows all

around the city were buzzing with the news that the KGB officers were responsible for the Russian oligarch's death. At about three o'clock that afternoon Litvinenko received an email about a mandatory business dinner at the local sushi bar; he had no choice but to attend. What Litvinenko didn't realize was that his boss knew he was the one who had leaked the information.

At dinner that night nothing seemed out of the ordinary to Litvinenko, and he thought he was safe from these dangerous men. However, earlier that evening his boss had paid the owner of the sushi bar to sprinkle some Polonium-210 into Litvinenko's sushi. When he got home he went to bed early because he felt under the weather but thought nothing of it. The next morning he still felt ill but could manage.

Over the next week Litvinenko went to work everyday, but was growing worse by the hour. One night he came home and passed out in front of his wife. She rushed him to the hospital where he stayed for observation. The doctors couldn't figure out what was wrong, but knew it was serious. Another week passed and Litvinenko looked and felt worse and worse. Finally after the 27th blood test Doctor Jeckel realized the source of Litvinenko's illness. The

doctor pulled Mrs. Litvinenko aside and began to explain that her husband had been poisoned by Polonium-210. He explained that the Polonium-210 in Litvinenko's body was emitting alpha particles that were damaging his body's cells. He also said the DNA in the cell was directly being targeted by the particles.

Sobbing, Mrs. Litvinenko asked the doctor how long her husband had to live. The doctor said probably a week and explained if it had been a higher dosage he would have been dead within a few days after he had initially ingested it. Litvinenko's wife desperately asked how much Polonium-210 her dying husband was given, and the doctor responded, "It's hard to say, because Radioactivity is a random process and it is physically impossible to predict whether or not a given atomic nucleus will decay and emit radiation at any given moment. This means we're not sure how much he was initially given, or how much is left because it's too random to figure out."

Upset, the wife thanked the doctor and went to talk to her husband. She found him reading an article the doctor had given him about the effects of nuclear reactions. He handed her the article so she could read it for herself. The article said, "In small doses nuclear reactors exploit

radioactivity to make heat and during pharmaceutical testing drugs are sometimes laced with radioactive atoms so that they can be more easily traced as they move throughout the body. On the other hand in large doses, radioactivity is extremely dangerous. In the Ukraine, a nuclear reactor meltdown incident that occurred during the Cold War continues to have toxic effects on the local population to this day." After his wife finished reading it Litvinenko said he couldn't believe he worked for five years with those men who were capable of putting something that toxic into a human being's body. All his wife could do was silently cry on his shoulder.

The last few days of Litvinenko's life passed quickly and he died on November 23, 2006. The media was all over the case and the sushi bar owner eventually confessed that Alexey Shiklomanov paid him to poison Litvinenko's food. Shiklomanov got away and remains hiding in an unknown location until this day.



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