

## Hurry up Half-life

*That would be wonderful*

Life on Earth  
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Radioactive waste has always had a hard time finding a long-term home. But new research suggests there might be a faster way to get rid of dangerous radioactive materials.

Radioactivity occurs when the nucleus of unstable isotopes like radium-226 or polonium-210 emit bits of energy. The radioactive decay, or half-lives of these isotopes, lasts anywhere from days to millennia, depending on the isotope, until, eventually, their nuclei become stable. The energy released during radioactive decay can be extremely dangerous to living tissue.

Physicists from the Laboratory for Underground Nuclear Astrophysics, a research center beneath Gran Sasso Mountain in Italy, claim to have discovered a way to speed up the decay rates of radioactive isotopes. The scientists mixed polonium-210 into liquefied copper and then cooled the metal solution to 259 degrees below 0 degrees Celsius. The cooling process causes the metal atoms to move closer to their nuclei. That creates a dense charge of negativity that releases radioactive emissions from the isotopes at a faster than normal rate. In the polonium experiment, the decay was sped up by 10 percent. That means it took only 124 days, instead of 138 days, for the isotope to become stable.

In the future, the physicists hope to take a more potent radioisotope, like radium-226, and reduce its 1600-year half-life to a dizzyingly short period of two years. The research is controversial, but if experiments are successful, they could have profound implications on the disposal of nuclear waste.