

Radioactive Samples

Learn about the 3 kinds of radioactivity- alpha, beta, gamma- by viewing actual samples of polonium, strontium, and cobalt, and then discussing what each does over time.

Type of Radiation	Element	#Protons	#Neutrons	Symbol	Turning into...	Half-life
Alpha Loses 2P & 2N	Polonium	84	126	Po-210	Lead- #82	138 days
Beta n → e + p	Strontium	38	52	Sr-90	Yttrium-#39	28 yrs.
Gamma High energy photon	Cobalt	27	33	Co-60	Nickel- #28	5 yrs.

Materials per group- Radioactive source kit available at sciencekit.com-
<http://sciencekit.com/radioactive-source-kit/p/IG0023988/>

If you don't have (or want) the set of radioactive samples, put up pictures from Google image:
<http://images.google.com/images?hl=en&source=hp&q=polonium&gbv=2&aq=f&oq=&aqi=> . Look up polonium, strontium, and cobalt.

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1. On a piece of paper have students set up the chart as shown. Columns include Type of Radiation, Element, # Protons, # Neutrons, Symbol, Turning Into, and Half-life.

This is available as a student handout (see last page).

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2. First, list the 3 kinds of radiation.

This is also available as a PowerPoint you can just click through (see last page).

Type of Radiation	Element	#Protons	#Neutr
Alpha			
Beta			
Gamma			

3. Hold up the sample (or show the picture) of polonium. If you want, touch on its historical background. Marie and Pierre Curie discovered it and Radium in 1898. Those 2 elements were also the first two radioactive elements discovered.

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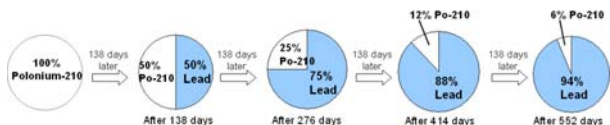
Complete the first line of info. for polonium. Have students do the work for you. Have them look in their book and tell you what alpha radiation is before you show that it loses 2 protons and 2 neutrons. They can also tell you Polonium has 84 protons, and add 84 + 126 to get a mass number of 210.

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4. The circles at the bottom will help us better understand how half-lives work. It starts off as 100% polonium. Since the half life is 138 days, then 138 days later half of it has decayed, so shade half of circle 2. 138 days later half of the remaining has decayed so shade half of what was left. And so forth.

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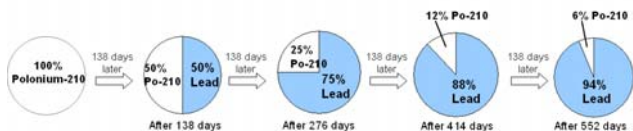


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5. Show the sample or picture of strontium, which will be our beta. Go through the information with students leading- they tell you what beta means, how many protons are in the nucleus, and the mass number.

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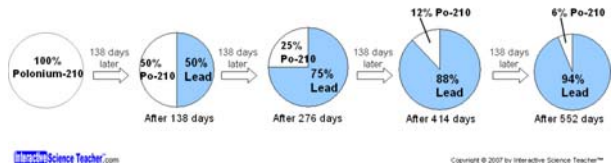


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6. Gamma is last.



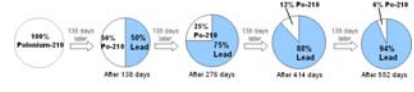
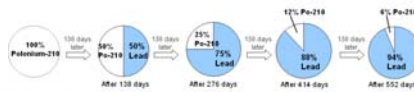
Come back and visit InteractiveScienceTeacher.com to upgrade this lesson with:

PowerPoint- lead your students through the lesson click-by-click

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Student Handout

Type of Radiation	Element	# Protons	# Neutrons	Symbol	Turning into...	Half-life

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