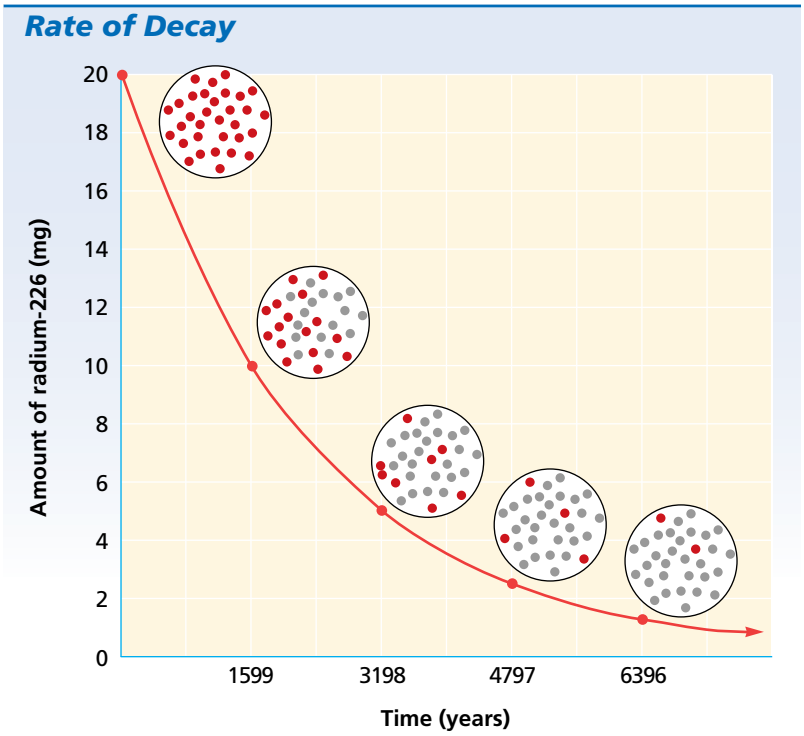
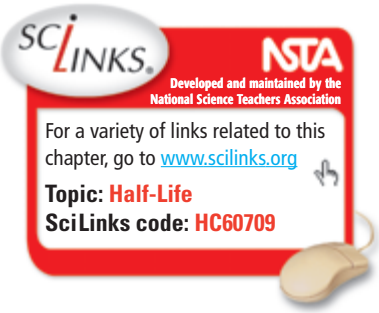
FIGURE 7 The half-life of radium-226 is 1599 years. Half of the remaining radium-226 decays by the end of each additional half-life.





Half-Life

No two radioactive isotopes decay at the same rate. **Half-life,** $t_{1/2}$, *is the time required for half the atoms of a radioactive nuclide to decay.* Look at the graph of the decay of radium-226 in **Figure 7.** Radium-226 has a half-life of 1599 years. Half of a given amount of radium-226 decays in 1599 years. In another 1599 years, half of the remaining radium-226 decays. This process continues until there is a negligible amount of radium-226. Each radioactive nuclide has its own half-life. More-stable nuclides decay slowly and have longer half-lives. Less-stable nuclides decay very quickly and have shorter half-lives, sometimes just a fraction of a second. Some representative radioactive nuclides, along with their half-lives, are given in **Table 2.**

TABLE 2 *Representative Radioactive Nuclides and Their Half-Lives*

Nuclide	Half-life	Nuclide	Half-life
$^{3}_{1}H$	12.32 years	$^{214}_{84}Po$	163.7 μs
$^{14}_{6}C$	5715 years	$^{218}_{84}Po$	3.0 min
$^{32}_{15}P$	14.28 days	$^{218}_{85}At$	1.6 s
$^{40}_{19}K$	1.3×10^{9} years	$^{238}_{92}U$	4.46×10^{9} years
$^{60}_{27}Co$	5.27 years	$^{239}_{94}Pu$	2.41×10^{4} years