

History of Radiation Protection Timeline Cards



Mendeleev introduces the periodic system of elements

Periodic Table

| Periodic Table | | | | | | | | | | | | | | | | 2 | | | | | |
|---------------------------------------|--|---|--|--|---|--|--|---|---|--|--|---|--|--|--|---|--|--|-----------------------------------|--------------------------------------|------------------------------------|
| 1 H 1.008 Hydrogen | | | | | | | | | | | | | | | 2 He 4.003 Helium | | | | | | |
| 3 Li 6.94 Lithium | 4 Be 9.012 Beryllium | | | | | | | | | | | | | | | 5 B 10.81 Boron | 6 C 12.011 Carbon | 7 N 14.007 Nitrogen | 8 O 15.999 Oxygen | 9 F 18.998 Fluorine | 10 Ne 20.180 Neon |
| 11 Na 22.990 Sodium | 12 Mg 24.305 Magnesium | | | | | | | | | | | | | | | 13 Al 26.982 Aluminum | 14 Si 28.085 Silicon | 15 P 30.974 Phosphorus | 16 S 32.06 Sulfur | 17 Cl 35.45 Chlorine | 18 Ar 39.948 Argon |
| 19 K 39.098 Potassium | 20 Ca 40.078 Calcium | 21 Sc 44.956 Scandium | 22 Ti 47.867 Titanium | 23 V 50.942 Vanadium | 24 Cr 51.996 Chromium | 25 Mn 54.938 Manganese | 26 Fe 55.845 Iron | 27 Co 58.933 Cobalt | 28 Ni 58.693 Nickel | 29 Cu 63.546 Copper | 30 Zn 65.38 Zinc | 31 Ga 69.723 Gallium | 32 Ge 72.630 Germanium | 33 As 74.922 Arsenic | 34 Se 78.971 Selenium | 35 Br 79.904 Bromine | 36 Kr 83.798 Krypton | | | | |
| 37 Rb 85.468 Rubidium | 38 Sr 87.62 Strontium | 39 Y 88.906 Yttrium | 40 Zr 91.224 Zirconium | 41 Nb 92.906 Niobium | 42 Mo 95.95 Molybdenum | 43 Tc (98) Technetium | 44 Ru 101.07 Ruthenium | 45 Rh 102.906 Rhodium | 46 Pd 106.42 Palladium | 47 Ag 107.868 Silver | 48 Cd 112.414 Cadmium | 49 In 114.818 Indium | 50 Sn 118.710 Tin | 51 Sb 121.760 Antimony | 52 Te 127.60 Tellurium | 53 I 126.904 Iodine | 54 Xe 131.293 Xenon | | | | |
| 55 Cs 132.905 Cesium | 56 Ba 137.327 Barium | 57 / | 72 Hf 178.49 Hafnium | 73 Ta 180.948 Tantalum | 74 W 183.84 Tungsten | 75 Re 186.207 Rhenium | 76 Os 190.23 Osmium | 77 Ir 192.217 Iridium | 78 Pt 195.084 Platinum | 79 Au 196.967 Gold | 80 Hg 200.592 Mercury | 81 Tl 204.38 Thallium | 82 Pb 207.2 Lead | 83 Bi 208.980 Bismuth | 84 Po (209) Polonium | 85 At (210) Astatine | 86 Rn (222) Radon | | | | |
| 87 Fr (223) Francium | 88 Ra (226) Radium | 89 / | 104 Rf (261) Rutherfordium | 105 Db (268) Dubnium | 106 Sg (271) Seaborgium | 107 Bh (270) Bohrium | 108 Hs (269) Hassium | 109 Mt (278) Meitnerium | 110 Ds (281) Darmstadtium | 111 Rg (282) Roentgenium | 112 Cn (285) Copernicium | 113 Nh (286) Nihonium | 114 Fl (289) Flerovium | 115 Mc (289) Moscovium | 116 Lv (293) Livermorium | 117 Ts (294) Tennessine | 118 Og (294) Oganesson | | | | |
| Lanthanide Series | | 57 La 138.905 Lanthanum | 58 Ce 140.116 Cerium | 59 Pr 140.908 Praseodymium | 60 Nd 144.242 Neodymium | 61 Pm (145) Promethium | 62 Sm 150.36 Samarium | 63 Eu 151.964 Europium | 64 Gd 157.25 Gadolinium | 65 Tb 158.925 Terbium | 66 Dy 162.500 Dysprosium | 67 Ho 164.930 Holmium | 68 Er 167.259 Erbium | 69 Tm 168.934 Thulium | 70 Yb 173.045 Ytterbium | 71 Lu 174.967 Lutetium | | | | | |
| Actinide Series | | 89 Ac (227) Actinium | 90 Th 232.038 Thorium | 91 Pa 231.036 Protactinium | 92 U 238.029 Uranium | 93 Np (237) Neptunium | 94 Pu (244) Plutonium | 95 Am (243) Americium | 96 Cm (247) Curium | 97 Bk (247) Berkelium | 98 Cf (251) Californium | 99 Es (252) Einsteinium | 100 Fm (257) Fermium | 101 Md (258) Mendelevium | 102 No (259) Nobelium | 103 Lr (266) Lawrencium | | | | | |

Atomic Number

SYMBOL

Atomic Weight *
Name

- Alkali metals
- Alkal earth metals
- Transition metals
- Post-transition metals
- Metalloid
- Lanthanides
- Actinides
- Nonmetals
- Halogens
- Noble gases

*() indicates the mass number of the longest-lived isotope.

Based on NIST 2017 Periodic Table

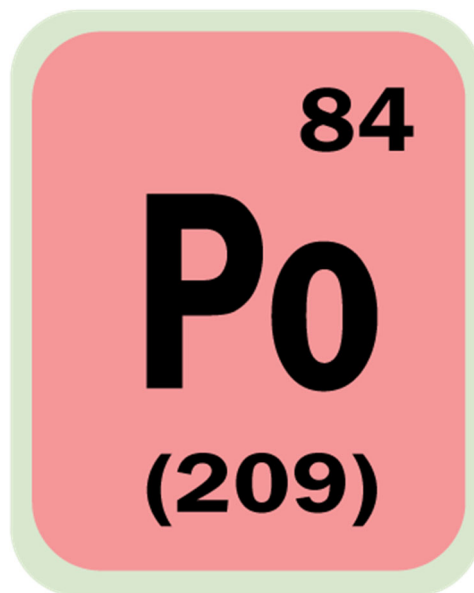
Wilhelm Röntgen discovers basic properties of x-rays



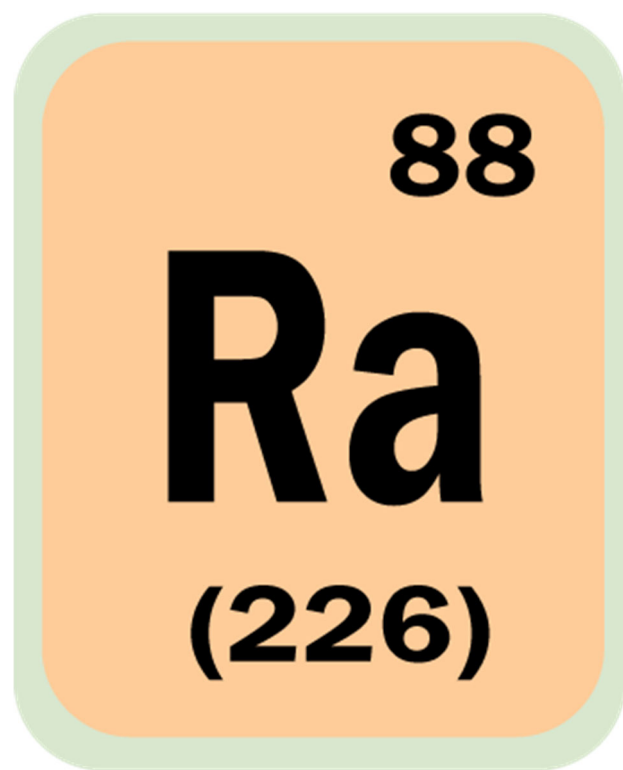
Henri Becquerel announces discovery of radioactivity



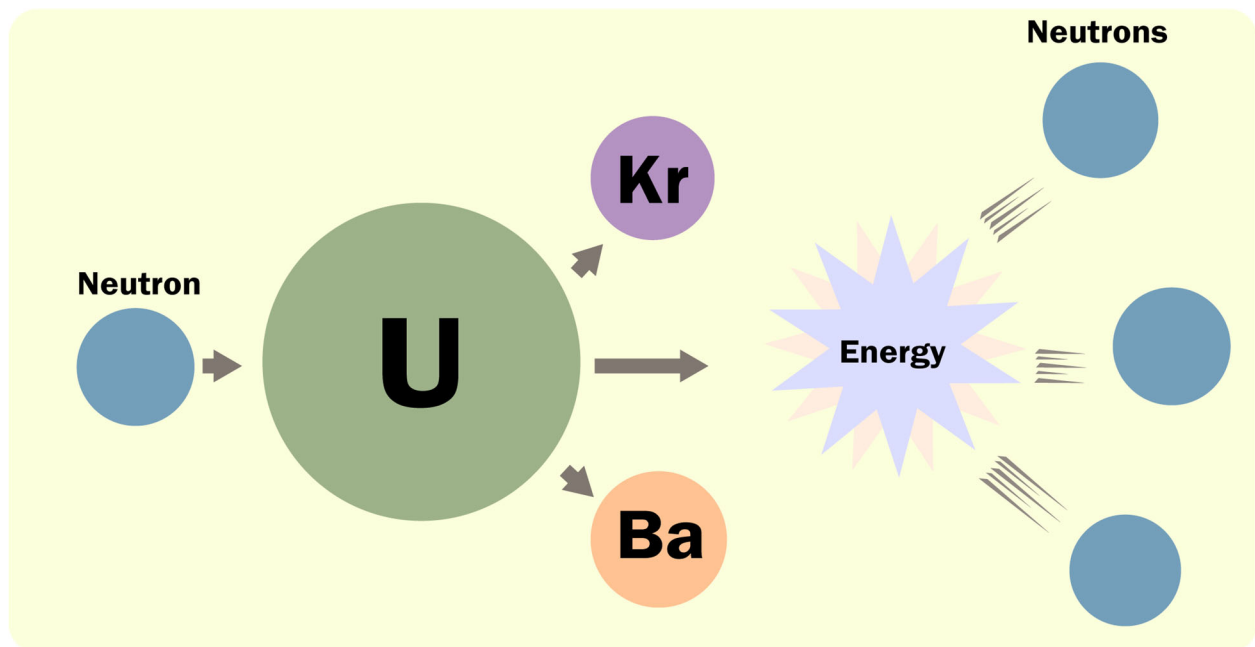
**Marie and Pierre Curie
discover polonium and
radium and coin the term
“radioactivity”**



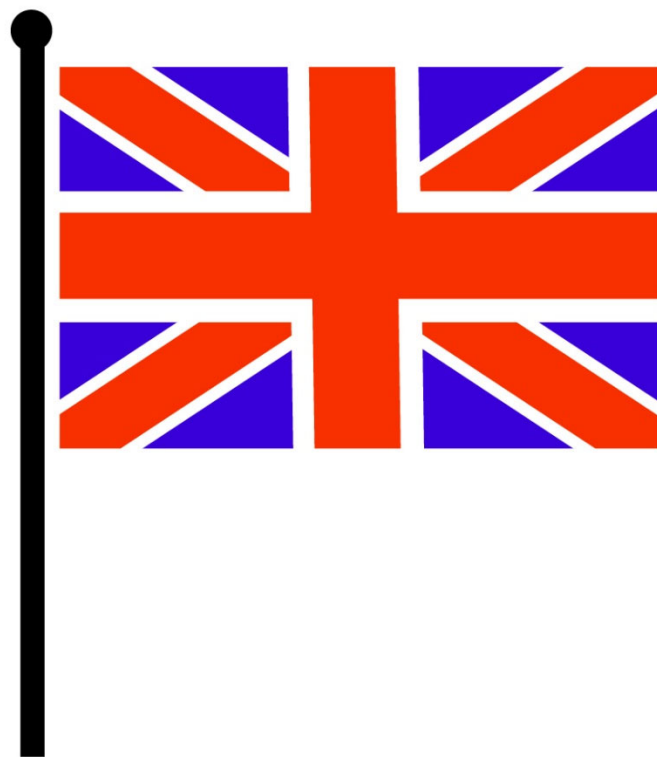
X-rays and radium are widely used



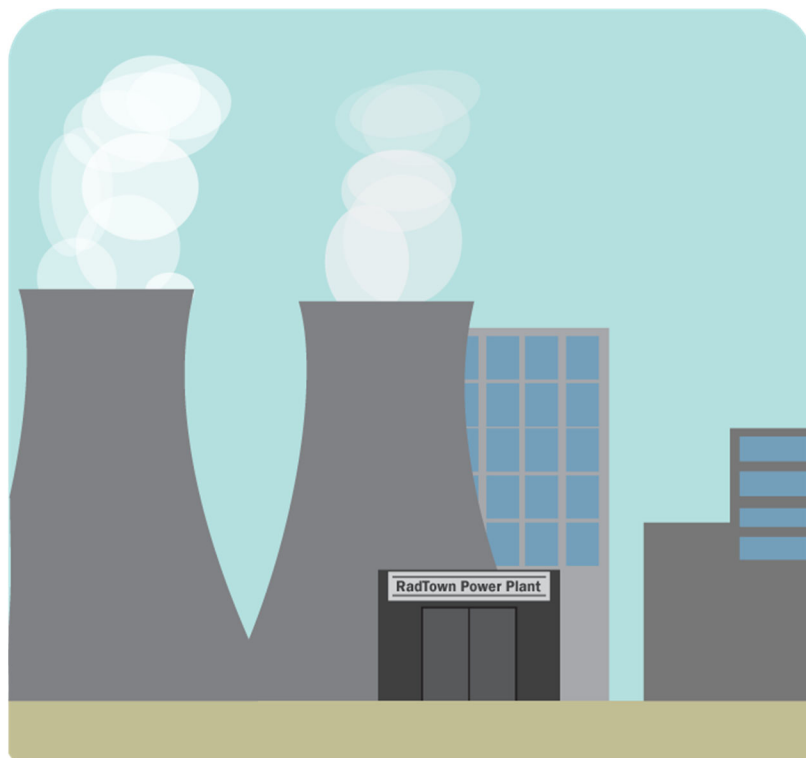
Scientists begin to understand fission and the decay of radioactive substances



American organizations adopt British protection rules



The first nuclear reactors and atomic weapons are developed



The British Roentgen Society resolves to protect people from overexposure to x-rays



Organizations form to address radiation protection in the United States and overseas



The Federal Radiation Council is established



Congress creates the Environmental Protection Agency

