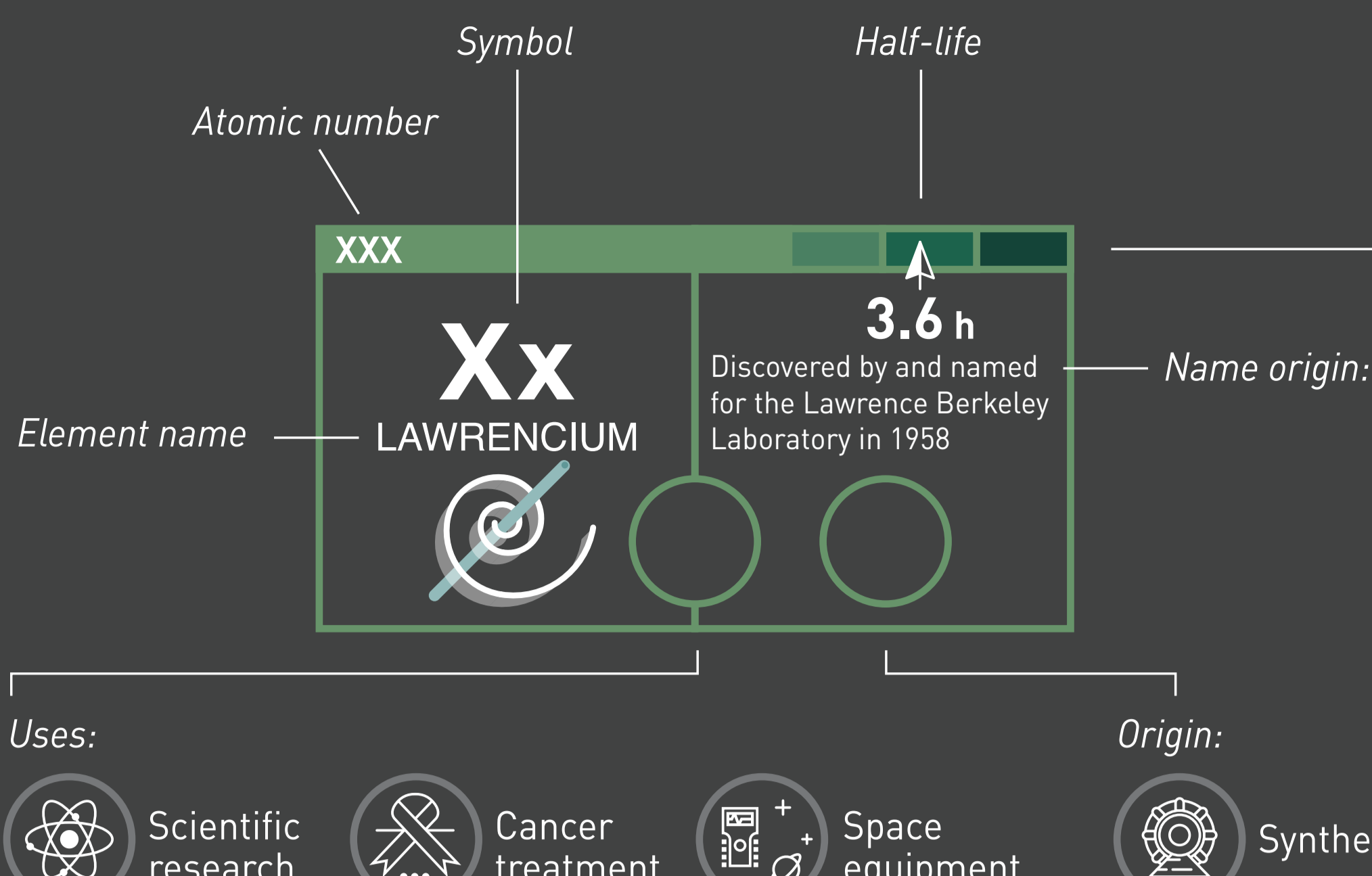


38 Radioactive Elements and What They Are Used For



EXTREMELY RADIOACTIVE ELEMENTS



110

Ds
DARMSTADIUM

12.7 sec
Named after Darmstadt, Germany, where it was discovered/ synthesized in a laboratory in 1994

118

Og
OGANESSON

89 msec
Honoring Yuri Oganessiana, pioneer in the discovery of synthetic elements

114

Fl
FLEROVIUM

1.9 sec
Named after the Flerov Laboratory of Nuclear Reactions of the Joint Institute for Nuclear Research in Dubna, Russia, where it was discovered in 1998

115

Mc
MOSCOVIUM

220 msec
In honor of Moscow, the capital of Russia, where it was created in 2003

Only a few atoms have been made. It can be used to make nihonium.

116

Lv
LIVERMORIUM

53 msec
Honors the U.S. Lawrence Livermore National Laboratory, which created the element in 2000 together with the JINR

It provides valuable insights into the behavior of superheavy ions

117

Ts
TENNESSINE

80 msec
Honors Tennessee, where many of the scientists on the Russian-American team that created it in 2010 resided

HIGHLY RADIOACTIVE ELEMENTS

85

At
ASTATINE

8.1 hr
From Greek astatos, meaning "unstable." It's the rarest naturally occurring element

Astatine-211 is used as a radioactive tracer and in cancer treatment.

87

Fr
FRANCIUM

22 min
Named in honor of France. 2nd rarest naturally occurring element; the earth's crust contains less than 1 gram at a time

Diagnostics for cancer treatment; spectroscopic experiments

102

No
NOBELIUM

58 min
Honors Alfred Nobel, the inventor of dynamite and benefactor of science

103

Lr
LAWRENCIUM

3.6 h
Discovered by and named for the Lawrence Berkeley Laboratory in 1958

104

Rf
RUTHERFORDIUM

1.3 hr
Honors New Zealand scientist Ernest Rutherford

106

Sg
SEABORGIUM

14 min
Honors American nuclear chemist Glenn T. Seaborg

107

Bh
BOHRIUM

61 sec
Honors Danish physicist Niels Bohr

108

Hs
HASSIUM

16 sec
Derived from the name of the German state Hesse, where the element was first made in 1984

109

Mt
MEITNERIUM

4.5 sec
Honors Austrian physicist Lise Meitner

May be used to harvest energy in the future

111

Rg
ROENTGENIUM

100 sec
Honors Wilhelm Conrad Röntgen, who won a Nobel prize for discovering X-rays

112

Cn
COPERNICIUM

28 sec
Honors Nicolaus Copernicus, a Renaissance mathematician who proposed that the sun was at the center of the universe

113

Nh
NIHONIUM

10 sec
Nihon is "Japan" in Japanese. It was the first element discovered in Asia.

RADIOACTIVE ELEMENTS (Some practical use but with high health risks)

84

Po
POLONIUM

138.4 days
Named after Poland, the native country of Marie Curie, who first isolated the element

Anti-static devices; heat source for space equipment; neutron triggers for nuclear weapons

86

Rn
RADON

3.8 days
Derived from "radium," as it was first observed as an emission from radium during radioactive decay

Early cancer treatment: Radon gas was sealed in tubes and then inserted into tumors.

89

Ac
ACTINIUM

10 days
Derived from Greek *aktinos*, meaning "ray"

Powerful source of alpha rays; has been studied as a heat source for use in space and as a possible cancer treatment

105

Db
DUBNIUM

28 hr
Named after the Russian town of Dubna

61

Pm
PROMETHIUM

17.7 ys
Named after Prometheus from Greek mythology, a titan who stole fire from the gods and granted it to humans

Luminous paint; nuclear batteries for guided missiles; time-keeping devices; light sources

99

Es
EINSTEINIUM

20 days
Named after Albert Einstein. It was discovered as a component of the debris of the first hydrogen bomb explosion.

100

Fm
FERMIUM

100.5 days
Named after nuclear physicist Enrico Fermi. It was first observed in the fallout of the "Ivy Mike" hydrogen bomb test of 1952

101

Md
MENDELEVIUM

51.5 days
Named after Dmitri Mendeleev, who created one of the first periodic tables

RADIOACTIVE ELEMENTS (Lower health hazards)

88

Ra
RADIUM

1,600 ys
From Latin *radius*, which means "ray"

Radiotherapy for cancer (especially bone cancer); luminous paints and clock faces

91

Pa
PROTACTINIUM

1.17 min
From Greek *protos*, meaning "first"

95

Am
AMERICIUM

432.2 ys
Named after America, where it was first made

Smoke detectors; may be used in spacecraft batteries in the future

97

Bk
BERKELIUM

4.94 days
Named after Berkeley, California, where it was first made

Due to its rarity, it has no commercial or technological use currently.

98

Cf
CALIFORNIUM

2.6 ys
Named after California, where it was first made

Portable metal detectors; identifying gold and silver ores; detecting metal fatigue of airplanes

43

Tc
TECHNETIUM

211,000 ys
From the Greek *tekhnētos*, meaning "artificial"

Medical diagnostic studies; inhibits corrosion of steel

83

Bi
BISMUTH

2.01x10¹⁹ ys
Comes from the German *Bismutum*, a corruption of *Weisse Masse*, meaning "white mass"

Used in alloys for smoke detectors, extinguishers, fuses, and solders; yellow paint; pearly effect in cosmetics; indigestion relief

90

Th
THORIUM

14 billion ys
Named after Thor, the Norse god of thunder

Used to coat tungsten filaments for electronic devices; may be used for nuclear power in the future

RADIOACTIVE ELEMENTS (Relatively Safe)

92

U
URANIUM

4.47 billion ys
Named after the planet Uranus

Nuclear submarines and weapons; nuclear power; depleted uranium may be used as metal for ships, ammunition, and armor

93

Np
NEPTUNIUM

396 days
Named after the planet Neptune

Used to coat tungsten filaments for electronic devices; may be used for nuclear power in the future

94

Pu
PLUTONIUM

24,100 ys
Named after the planet Pluto

Nuclear power; nuclear weapons; spacecraft energy

96

Cm
CURIUM

163 days
In honor of Pierre and Marie Curie, radioactivity pioneers

Spacecraft energy

Note: Half-lives vary depending on the specific isotope.

Sources:
<https://www.livescience.com>
<https://www.rsc.org/periodic-table>
<https://www.epa.gov/radiation/radioactive-decay>