[C-4] How Old Is The Earth?

{Updated 11/24/14}

Geochronology is the science of dating the age of the earth.

Over the years numerous methods have been devised to date the age of the earth. The most reliable methods devised to this date have to do with radioactive dating methods. **Radioactive dating is based on the physical laws of radioactive decay.** Basically by measuring the amount of a given radioactive substance and comparing that amount with the amount of the daughter elements found in a sample we should be able to date any substance containing radioactive material. By using radioactive dating we should be able to fairly accurately date objects a few thousand years old if all of the conditions listed below are met. Since the amount of radioactive material is halved each half life, the accuracy of the dating also is reduced exponentially. There are several radiometric dating methods. Only a couple will be discussed here since all follow the same general rules. These general rules are:

1. We must be able to determine the original amount of radioactive material. **[We can do this by comparing the ratio of parent elements to daughter elements -- provided the following rules are met.]**
2. We must be sure that none of the radioactive element's daughter elements were present in the original sample.
3. We must be sure the rate of radioactive decay has remained constant.
4. We must be sure no contaminates (anything that would cause an invalid reading -- parent or daughter elements) have entered the sample.
5. We must be sure that no particles have been leeched (washed out).
6. We must be sure that external radiation striking the sample has remained constant.

Radio-carbon dating:

Radioactive C^{14} is formed in our atmosphere when nitrogen {N^{14}} is struck by high speed cosmic rays. The half-life of carbon 14 is 5,760 years. To use the carbon 14 method of dating the following must be true: The carbon 14 in the earth's atmosphere must be in radioactive equilibrium. In other words the amount of radioactive carbon being produced in any given time period must equal the amount of carbon 14 decaying in the same time period. There must be no radioactive carbon 14 in a sample before the elements come together to form a living organism. Plants breathe carbon dioxide therefore the amount of ordinary carbon and amount of radioactive carbon should be in the same ratio in the organism as it is in the atmosphere as long as it is alive. We should be able to determine the age of plants (and plant products) [also the age of animals which eat plants and products made from animals] by comparing the amount of carbon 14 with the amount of ordinary carbon in the organism and in turn comparing this with the percentages of these same materials in the earth's atmosphere.

In the late 1950's and early 1960's extensive tests were conducted to determine the amount of radiation in the earth's atmosphere. This became increasingly important because of the "space race." If we were to send up astronauts we needed to know if they would be exposed to deadly radiation. By measuring the amount of radioactive materials being created by solar radiation

it has been calculated that approximately 30,000 years is all that would be needed to reach radioactive equilibrium. Therefore those who hold to any theory which assumes an old age for the earth would have to assume the earth has long been in radioactive equilibrium. The results of those studies however revealed that the earth's atmosphere is nowhere close to being in equilibrium! We now know that carbon 14 is currently being produced at a rate of 2.5 atoms per square centimeter per second and the rate of decay is 1.9 atoms per square centimeter per second a difference of .6 carbon 14 atoms per square centimeter per second a difference of 24%!! {Critique of Radiometric Dating,by Harold Slusher, Pub. by the Institute of Creation Research, 1973, p. 39} Thus the ratio of carbon 14 to ordinary carbon in the past should be much lower than at the present since this ratio is continuing to increase. **This means that all radioactive dating must be adjusted to account for the fact that the atmosphere is not in radioactive equilibrium.**

Studies at Texas A&M and other universities has revealed that increased radiation causes plants and animals to mature faster and also to have shorter life spans. Historically we can document the fact that the life span of mankind has grown shorter and shorter over the centuries. The life span today in many underdeveloped nations such as Haiti is only 37 years! Only with the advent of modern medicine have we been successful in reversing this trend. Therefore historic evidence also supports the fact that the atmosphere is not in radioactive equilibrium.

Ozone is also produced in the earth's atmosphere by cosmic radiation. By measuring the amount of ozone in the earth's atmosphere we should be able to calculate the approximate age of the earth. Records on ozone have been kept for many years. In recent years with the introduction of fluorocarbons into the atmosphere ozone has been destroyed therefore older records (before the use of fluorocarbons) must be used to obtain a more accurate estimate of the earth's age. When the Ozone method was devised in the 1950's it was hailed as the one method which would once and for all establish the age of the earth. The reason for this belief was (1) it is assumed that the amount of solar radiation has not significantly changed during the earth's history, and (2) the earth's atmosphere has not significantly changed since mankind came upon the earth. When the results came in the dated age was less than 10,000 years! For this reason the lithium-ozone method of dating is rarely mentioned today except by those who have rejected the philosophy of evolution. **In fact, however, all radioactive dating methods when adjusted to a non-equilibrium state yield an age less than 10,000 years.**

Studies measuring the amount of meteoritic dust entering the earth's atmosphere each year indicate that **about 28,600,000 tons of meteoritic dust enter our atmosphere each year. This dust is about 2.5 percent nickel, which is about 312 times the amount of nickel found in rocks in the earth's crust. About half of this (14,300,000 tons) settles to the ground each year.** If this has been going on for 5 billion years as some would say, the entire surface of the earth would now be covered by 54 feet of meteoritic dust! This of course is not the case.

Why do some scientists still believe the earth is old? The original reason for thinking the earth was old was because of the belief by some that the Bible is an unacceptable explanation for the creation of the earth. Charles Darwin was a seminary student turned apostate who set out to find some other explanation. Based on the philosophies of Hume and others Darwin developed his theory which was published in the Origin of the Species. Since evolution had

never been scientifically observed the reasoning was that evolution was proceeding at a rate too small to be measured. By slowing down the "model" of evolution to a set rate lower than we can presently measure we can calculate the approximate age the earth would have to be if evolution actually occurred. As our scientific equipment has become more and more sophisticated without any evolution being observed the age of the earth has been re-adjusted older and older. It has been noted that evolutionists dating of the earth's age have doubled the age of the earth about every 15 years since evolution was first introduced. Of course by applying the laws of probability to evolution we know that we should be able to find multitudes of signs of evolution without long periods of time {just like we find daughter elements of radioactive materials in any sample}.

There is only one known method which yields an old age for the earth-- the "geologic ages" method. This method **assumes** that the layers of the earth are laid down over tremendous time periods. Therefore because multiple layers can be identified geologically the earth must be very old. Since the tremendous time is assumed the geological ages are determined to be much older. **With the eruption of Mt. St. Helens in May of 1980 we now know the old geologic ages method of dating is invalid** -- canyons 1/40th the size of the Grand Canyon with layers from 1/2" to 25' thick were created in only a couple of months. Almost all geologists today admit that "catastrophism" better fits the scientific data than the "geological ages." The simple fact is that if the 'Geological ages column' existed anywhere on earth, it should be the rule, not the exception. In reality, however, of all the innumerable geological excavations and core samples taken all over the world, the 'geological ages column' has never been found!! As Dr. Henry Morris demonstrated in the 1960's the physical laws of hydrology and buoyancy better fit with fossil discoveries including the 'fossil graveyards' in which fossils of all 'geological ages' are found in the same location -- than the 'geological ages.'

Periodic table

Group	1	2		3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Period																			
1	1 H																		2 He
2	3 Li	4 Be												5 B	6 C	7 N	8 O	9 F	10 Ne
3	11 Na	12 Mg												13 Al	14 Si	15 P	16 S	17 Cl	18 Ar
4	19 K	20 Ca		21 Sc	22 Ti	23 V	24 Cr	25 Mn	26 Fe	27 Co	28 Ni	29 Cu	30 Zn	31 Ga	32 Ge	33 As	34 Se	35 Br	36 Kr
5	37 Rb	38 Sr		39 Y	40 Zr	41 Nb	42 Mo	43 Tc	44 Ru	45 Rh	46 Pd	47 Ag	48 Cd	49 In	50 Sn	51 Sb	52 Te	53 I	54 Xe
6	55 Cs	56 Ba	*	71 Lu	72 Hf	73 Ta	74 W	75 Re	76 Os	77 Ir	78 Pt	79 Au	80 Hg	81 Tl	82 Pb	83 Bi	84 Po	85 At	86 Rn
7	87 Fr	88 Ra	* *	103 Lr	104 Rf	105 Db	106 Sg	107 Bh	108 Hs	109 Mt	110 Ds	111 Rg	112 Uub	113 Uut	114 Uuq	115 Uup	116 Uuh	117 Uus	118 Uuo

***Lanthanoids**	*	57 La	58 Ce	59 Pr	60 Nd	61 Pm	62 Sm	63 Eu	64 Gd	65 Tb	66 Dy	67 Ho	68 Er	69 Tm	70 Yb
****Actinoids**	* *	89 Ac	90 Th	91 Pa	92 U	93 Np	94 Pu	95 Am	96 Cm	97 Bk	98 Cf	99 Es	100 Fm	101 Md	102 No

Decay of Uranium 238

$_{92}U^{238}$ {Uranium} half-life $4.5x10^9$ years --> alpha particle

$_{90}Th^{234}$ {Thorium} half-life 24.5 days --> beta particle

$_{91}Pa^{234}$ {Protoactinium} half-life 1.14 minutes --> beta particle

$_{92}U^{234}$ {Uranium} half-life $2.33x10^5$ years -->alpha particle

$_{90}Th^{230}$ {Thorium} half-life $8.3x10^4$ years --> alpha particle

$_{88}Ra^{226}$ {Radium} half-life 1590 years -->alpha particle

$_{86}Rn^{222}$ {Radon} half-life 3.825 days --> alpha particle

$_{84}Po^{218}$ {Polonium} half-life 3.05 minutes --> alpha particle

$_{82}Pb^{214}$ {Lead} half-life 26.8 minutes -->beta particle

$_{83}Bi^{214}$ {Bismuth} half-life 19.7 minutes --> beta particle

$_{84}Po^{214}$ {Polonium} half-life $1.5x10^{-4}$ seconds --> alpha particle

$_{82}Pb^{210}$ {Lead} half-life 22 years --> beta particle

$_{83}Bi^{210}$ {Bismuth} half-life 5 days --> beta particle

$_{84}Po^{210}$ {Polonium} half-life 140 days --> alpha particle

$_{82}Pb^{206}$ {Lead} stable

Decay of Potassium 40

{Potassium 40 has two paths of decay}

$_{37}K^{40}$ --> gamma ray

$_{36}Ar^{40}$ {Argon}

or

$_{37}K^{40}$ --> beta particle

$_{38}Ca^{40}$ {Calcium}

Cosmic Radiation produces: $_7N^{14}$ + 1neutron --> $_6C^{14}$ + 1proton

Carbon 14 decays back to nitrogen: $_6C^{14}$ --> $_7N^{14}$ + 1beta

Note: the subscript 92 in $_{92}U^{238}$ represents the **Atomic Number** {the number of protons}. The superscript 238 represents the **Atomic Mass** {the number of protons and neutrons} **Nuclides** {neutrons and protons} of the same atomic mass but different atomic numbers are called **isobars**. **Nuclides** of the same atomic number but different atomic masses are called **isotopes**.

An alpha particle is practically identical to a helium nucleus and is written as $_2He^4$.
The beta particle is the same electrical charge as an electron.
It is believed that a beta particle results from the decay of a neutron into a proton and an electron.
A gamma ray is electromagnetic radiation similar to x-rays but of higher frequency.
'At any temperature or pressure, collisions with stray cosmic rays or emanations of other atoms may cause changes other than those of normal disintegration.' {Critique of Radiometric Dating, Harold Slusher, Published by Institute of Creation Research, 1973}

Evolutionists hold that life consists only of physical and chemical reactions. If this is true life itself must obey the known laws of science yet evolution contradicts all known laws of physics and chemistry! See: Evidences against Evolution
Conclusion: Since no human being was present when the earth was actually created we can only estimate the age the best way we can by the scientific knowledge available to us. The scientific evidence points to an age of less than 10,000 years. To state the earth is much older a person must rely on their personal beliefs rather than science. Biblical dating as demonstrated in my notes on The World Time Line of Biblical Chronology indicate the earth is approximately 6000 years old.