Disclosure

of things evolutionists don't want you to know

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Uranium Disequilibrium

Uranium isotopes should be in equilibrium if the Earth is more than 2 million years old—but they aren't.

Before we explain why uranium isotopes prove that there hasn't been enough time for all the various forms of life to evolve, let's begin by telling you the back story behind this essay.

Pitman's Arguments

Some might say it is a slight exaggeration to call Sean Pitman a "famous creationist," but he certainly is well known in creationist circles. [1] He is the author of the book, Turtles All the Way Down. [2]

Recently, on a religious website,[3] he posted a rebuttal to ten common arguments against a young Earth. Those ten arguments involve tree rings, ice core layers, thick volcanic ash layers, DNA, potassium-argon dating, argon-argon dating, fission track dating, varves, and dinosaur soft tissues and radiocarbon. After discussing each of those in detail, he provided links to 11 arguments in favor of a young Earth. Those young Earth arguments are based on continental erosion rates, mountain sedimentary layer erosion rates, ocean sediment influx vs. subduction, detrimental mutation rate for humans, radiocarbon in dinosaur fossils, coal, and oil, preserved proteins in fossils, paraconformities, erosion rates between layers, pure thick coal beds, minimal bioturbation between layers, and worldwide paleocurrent patterns. He later posted another article on the subject. [4]

We have addressed a few of these arguments in previous letters, but tend not to talk about them because this is a NEWS letter, and these arguments between creationists and evolutionists are decades old—they aren't new. Furthermore, they appear on many creationist sites and in creationist books, so you have probably heard them already. There is no value added if we simply parrot these tired old debates.

We believe that although these Young Earth arguments are strong, they are not compelling because they tend to rely upon reasonable, but unverifiable, assumptions about rates and/or initial conditions.

In his post, Dr. Pitman did not provide a link to our argument for a maximum 2 million year age of the Earth based upon the ratio of uranium isotopes, [5] possibly because he was unaware of it. As far as we know, we are the only ones to ever have advanced that argument. So, to get wider distribution, we mentioned it in a response to his blog post.

Evolutionary Silence

No evolutionist has ever written to us to refute our argument. One creationist, whose first name ironically is Darwin, tried to verify our numbers as soon as our essay was published, and was unable to do so. When he brought this fact to our attention, we discovered that there must be a numerical error; but after checking and rechecking our work, we could not find our error. Eventually, we realized that the error was in Table S-1 of the peer-reviewed article in the journal *Science*. The column heading of that table said that the numbers were the isotope ratios; but in fact the numbers were actually decay rate ratios. We ran

[1] http://creationwiki.org/Sean_Pitman

[2] Available from http://www.detectingdesign.com/

[3] http://www.educatetruth.com/featured/common-arguments-against-a-7-day-creation-week/

[4] http://www.educatetruth.com/featured/radioactive-clocks-and-the-true-age-of-life-on-earth-2/

[5] *Disclosure*, July 2012, "U-Series Dating", http://www.scienceagainstevolution.info/v16i10f.htm

a correction the following month. [6] Darwin confirmed the correction. The correction actually made our argument stronger.

Pitman's Analysis

So, our corrected argument has stood unchallenged for nearly four years. Still, we hoped that Dr. Pitman would examine our argument and evaluate it. Here is his response:

> It's an interesting but fairly complicated argument that really doesn't seem to me to be clearly in favor of one side or the other (young or old Earth) – because of the primary reason that I don't generally trust radioactive "clocks" to begin with. That is, rocks or crystals that contain radioactive materials aren't really closed systems. In any case, here's the basic argument you've presented on your website, as far as I can tell, and my problem with it in a nutshell.
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> After 2 million years, whatever amount of ^{234}U that was originally created would all be gone – which seems pretty straightforward due to the relatively rapid decay rate of ^{234}U. Therefore, all the ^{234}U in the world today would have to have been created by the decay of ^{238}U, and the rate that ^{234}U is being created by the decay of ^{238}U would equal the rate at which ^{234}U was being lost through radioactive decay – which is good so far. So, everywhere uranium is found, the rate of production should equal the rate of loss. However, this isn't what is generally found in real life. In real life there are places with much higher levels of ^{234}U than there should be. Some places have up to eight times, or more, than the expected levels of ^{234}U. How can such findings be explained?
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> One possibility, of course, is that the Earth itself is less than 2 Ma and that the original created level of ^{234}U was quite high and has yet to be exhausted because of the Earth's young age. However, another option (which seems much more likely to me) is that unequal contamination is to blame due to the fact that the rocks and crystals being evaluated simply aren't closed systems. This scenario also seems more likely to me given the fact that almost all groundwater throughout the world has a ratio of $^{234}U/^{238}U$ that is >1 (evidently since ^{234}U is a bit more water soluble than ^{238}U). This throws everything off and makes the uranium clock completely unreliable as far as I can tell.

Fair enough. But rather than argue with him I simply asked,

Please give me the references for the facts that "almost all groundwater throughout the world has a ratio of $^{234}U/^{238}U$ that is >1" and "^{234}U is more water soluble than 238U."

He promptly responded with the requested references:

> "In soils and rocks, the activity of ^{234}U and ^{238}U is identical; they are said to be in secular equilibrium. In natural waters, however, the ^{234}U is slightly more soluble and the activity ratio of ^{234}U to ^{238}U varies from 1:1 to more than 20:1. Consequently, the conversion from activity to mass or vice versa, requires knowledge of the concentration of each of the three uranium isotopes." [7]
>
> "^{238}U decays via two very short-lived intermediates to ^{234}U (Fig. 12.2). Since ^{234}U and ^{238}U have the same chemical properties, it might be expected that they would not be fractionated by geological processes. However, Cherdyntsev and co-workers (1965, 1969) showed that such fractionation does occur. In fact, natural waters exhibit a considerable range in $^{234}U/^{238}U$ activities from unity (secular equilibrium) to values of 10 or more (e.g. Osmond and Cowart, 1982). Cherdyntsev *et al*. (1961) attributed these fractionations to radiation damage of crystal lattices, caused both by emission and by recoil of parent nuclides. In addition, radioactive decay may leave ^{234}U in a more soluble +6 charge state than its parent (Rosholt *et al*., 1963). These processes (termed the 'hot atom' effect) facilitate preferential leaching of the two very short-lived intermediates and the longer-lived ^{234}U nuclide into groundwater. The short-lived nuclides have a high probability of decaying into ^{234}U before they can be adsorbed onto a substrate, and ^{234}U is itself stabilised in surface waters as the soluble UO2++ ion, due to the generally oxidising conditions prevalent in the hydrosphere." [8]

Civil Discourse

Before we address the substance of Dr. Pitman's position, we would like to note the difference in tone between emails we get from creationists and emails from evolutionists. When we get emails from creationists who disagree with us, they politely state why they disagree, presenting facts relevant to their position.

If you look back over the emails from

[6] *Disclosure*, August 2012, "U-Series Correction", http://www.scienceagainstevolution.info/v16i11f.htm

[7] Radiation Safety Engineering, Inc., "Uranium in Drinking Water", http://www.radsafe.com/?page_id=203

[8] Alan P. Dickin, Professor, Radiogenic Isotope Geology, Cambridge University Press, http://www.onafarawayday.com/Radiogenic/Ch12/Ch12-3.htm

evolutionists we have published in past newsletters, you will see that evolutionists typically just make emotional attacks against me and religion. When pressed for specific factual errors, the general response is, "There are too many to list." When asked for just one factual error on the list, they either don't respond, or just make more personal attacks.

We have no doubt that Dr. Pitman is passionate about his beliefs—but his passion does not overrule his rationality. He knows what he believes, and has scientific reasons for his beliefs.

On the other hand, the emails we get from evolutionists indicate such an emotional bias that it is impossible to reason with them. Facts don't matter.

Dr. Pitman provided evidence that water contains more ^{234}U than one would expect. There is no argument about that. The question is, "Why is there so much?" Is it because ^{234}U is more soluble? Or is it because there is more ^{234}U available in rocks to be dissolved?

In the article that inspired our first essay on the topic, [9] four of the six rocks analyzed to determine the age of the cave paintings (O-80, O-110, O-22, and O-69) had measurements of ^{234}U that were higher than equilibrium. Sample O-110 had nearly an 8:1 ratio! Just two (O-30 and O-9) had ratios of less than 1. Two thirds of the rocks analyzed had decay ratios greater than 1, so there is evidence that some rocks have more ^{234}U than expected to be available to dissolve.

An Undeniable Fact and Questionable Conclusions

In many locations, the ratio of uranium isotopes is not in equilibrium. Our argument is not based on a single, isolated place where uranium isotopes are not in equilibrium. It is commonly known (by people who measure these things) that uranium isotopes are often not even close to equilibrium.

Dr. Pitman's first reference came from "Uranium in Drinking Water", published by Radiation Safety Engineering, Inc. It deals with how to calculate the maximum uranium contamination levels in drinking water to see if they conform to Environmental Protection Agency regulations. It never occurred to them that these measurements would have anything to do with creation or the theory of evolution, so there is no creationist bias, or evolutionist bias, in these measurements. They measured ratios varying from 1:1 to 20:1 in water.

Dr. Pitman's second link goes to chapter 12 of Radiogenic Isotope Geology by Alan P. Dickin, Professor, School of Geography & Earth Sciences, McMaster University, Ontario, Canada. In it, he notes the problem of "excess ^{234}U" in water when trying to use uranium to calculate the age of coral. He suggests a method that can be used to "correct" the inaccurate dates resulting from the excess ^{234}U.

The widespread observation of uranium isotope disequilibrium is an undeniable fact. One can't argue with a fact like that.

On the other hand, the explanation for why this is commonly (perhaps even universally) observed, is open to reasonable debate.

Two Questionable Conclusions

Ours is the simple conclusion: When the planet was created, there were different amounts of various uranium isotopes in different places, and there has not yet been time for them to reach equilibrium.

The evolutionary conclusion is that ^{234}U must be more soluble in water than ^{238}U, and water must be moving the ^{234}U around disturbing the equilibrium. They speculate that, when uranium decays, it must fracture the crystal in such a way that makes ^{234}U more soluble than ^{238}U. There is no good reason to believe this, other than that it is the only thing they can think of to explain the observable evidence that uranium isotopes are not commonly in equilibrium. They are just grasping for a straw to explain the unexplainable.

Remember that professor Dickin wrote, "Since ^{234}U and ^{238}U have the same chemical properties, it might be expected that they would not be fractionated by geological processes." He is right about that. Chemical properties are determined by the number of protons, not the number of neutrons, in the atom. All uranium atoms have 92 protons—that's what makes the atom a uranium atom. The most common form of uranium, ^{238}U, has 146 neutrons. ^{234}U has only 142 neutrons; but that should not change its solubility.

A Scientific Answer

It is possible to use science to determine which conclusion is correct—but (to our knowledge) it hasn't been done. The key issue is whether or not ^{234}U naturally occurring in rocks is more soluble than ^{238}U. So, the simple scientific solution is to measure uranium isotope solubility. Here's how we would do it, if we had the necessary equipment.

1. Obtain several rocks containing uranium.

[9] *Disclosure*, July 2012, "U-Series Dating", http://www.scienceagainstevolution.info/v16i10f.htm

2. Measure the radiation ratios coming from each rock. (When ^{234}U decays, it produces a different kind of radiation than when ^{238}U decays. Instruments that can differentiate between the two kinds of radiation must exist because the technical literature we referenced contains tables of isotopic radiation ratios.)
3. Record the initial radiation ratios. (If the rocks are older than 2 million years, the uranium isotopes in them should have reached equilibrium, so the amount of radiation from ^{238}U producing ^{234}U should exactly equal the amount of radiation caused by the disintegration of ^{234}U. That is, the ratio should be 1:1. But, in the real world, that usually isn't the case. The rocks may have ratios from 0.7:1 to 20:1.)
4. Put each rock in a different (sealed) tank of purified water (which emits no radiation at all) for as long as it takes for the water to dissolve some of the uranium from the rock.
5. Remove the rocks from the water and dry them off.
6. Measure the final radiation ratio coming from each of the dry rocks.
7. Measure the radiation ratio coming from the uranium isotopes dissolved in the water in each of the tanks.

If ^{234}U is more soluble than ^{238}U, then the radiation ratio of each rock at the end of the experiment will be lower than it was at the beginning of the experiment (because there is less ^{234}U in it) and the ratio of radiation coming from the water will be higher than the initial radiation ratio of that rock (because there is proportionally more ^{234}U in the water).

If both are equally soluble, the radiation ratio of the water will equal the final radiation ratio of the rock, which will equal the initial radiation ratio of the rock.

If both isotopes are equally soluble, it blows the conventional old-earth explanation for why uranium isotopes aren't in equilibrium out of the water ☺.

This is how science works. You do an experiment to determine the truth. You don't just make up plausible stories.

Let's hope someone looking for a PhD thesis reads this article and gets a grant to do this experiment and settle the question once and for all.

The Tungsten Problem

Tungsten isotopes are inconsistent with the currently accepted theory about how Earth formed.

In addition to the question of when Earth formed, there is the question of how quickly Earth formed. Creationists like to point to polonium halos as evidence that Earth formed rapidly—but we aren't going to address that argument. Instead, let's look at recently published discoveries of tungsten isotopes which are inconsistent with the conventional cosmological myth.

Here is the way *Science News* summarized it:

> Earth formed about 4.6 billion to 4.5 billion years ago as planetary bodies collided, disintegrating and melting to accrete into one mass like a hot, rocky lint ball. Geologists have assumed that any relics of this bumpy beginning were mixed beyond recognition.
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> Instead, Rizo's team found a surprise: Some modern flood basalts have unusually high concentrations of tungsten-182. That's significant because that isotope forms only from radioactive decay of hafnium-182. And hafnium-182 only existed during Earth's first 50 million years. "These isotopes had to be created early," says Rizo, of the University of Quebec in Montreal.
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> …
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> Her team found that levels of tungsten-182 in the lavas varied, suggesting that the deep sources of these younger rocks were different pieces of Earth's oldest material, each with their own isotopic signature and history. These results also show that the ancient remnants have somehow escaped being mixed by convection currents. [10]

Rizo's article was published in the journal, *Science*. The editors said this about her discovery:

> On page 809 of this issue, Rizo *et al.* report W [W is the chemical symbol for tungsten]

[10] Beth Geiger, *Science News*, June 11, 2016, "Remnants from Earth's birth linger 4.5 billion years later", p 13, https://www.sciencenews.org/article/remnants-earth-birth-linger-45-billion-years-later?mode=magazine&context=191919&tgt=nr

> isotope data from young mantle-derived rocks with $\mu^{182}W$ excesses of 10 to 48 ppm. This result is spectacular because the range of $\mu^{182}W$ values in mantle-derived rocks is larger than can be accommodated by late accretion; the implication is that remnants of Earth's earliest mantle have been preserved over the entirety of Earth's history. [11]

Let's try to put this in simple terms. Conventional wisdom is that Earth formed when a bunch of rocks orbiting the Sun were pulled together by gravity. When they smashed together at high rates of speed, their kinetic energy was converted to heat, resulting in a large ball of gooey, molten rock. Heavier elements sunk before the rock cooled enough to harden. When they did cool, Earth had an inner core, a mantle, and a crust. It presumably took a long time for Earth to cool because of its large thermal mass.

The recent measurements seem to indicate that Earth cooled quickly enough that elements were frozen in place before they could distribute themselves as expected.

Rizo believes tungsten-182 "forms only from radioactive decay of hafnium-182." "And hafnium-182 only existed during Earth's first 50 million years." Yes, hafnium-182 does have a half-life of only 8.9 million years, [12] so it should be all gone in 50 million years; but traces of it have been found in nature. [13] (There must have been an awful, awful lot of it to begin with for any of it to be left at all! ☺) And hafnium-182 does decay to tungsten-182 (after existing as tantalum-182 for a few months); but how does anyone know that all tungsten-182 came from the decay of hafnium-182? Whatever process created all matter could have created tungsten-182 directly, could it not?

The Moon

This discovery also has some bearing on one theory about the origin of the Moon. All the theories about the origin of the Moon are controversial. One, however, is that the Moon was created when another (unknown) planet, roughly the size of Earth, smashed into Earth and knocked some of Earth's mantle into space, where it somehow defied the laws of orbital mechanics and started orbiting Earth. (Remember, the Apollo astronauts had to fire retro rockets on the far side of the moon to achieve lunar orbit.) Since the Moon is really just part of Earth (or so they say) it should have similar isotopic content. But the *Science* editor said,

> The new data from flood basalt lavas that erupted into the North Atlantic Igneous Province (Baffin Bay locale) and the Ontong Java Plateau (western Pacific Ocean) show larger $\mu^{182}W$ variability than between the Moon and Earth's mantle. In fact, the mantle source of the Ontong Java and Baffin Bay lavas prior to late accretion probably had a radiogenic W excess of +70 ppm. This exceeds what can be accomplished by late accretion. By implication, these parts of Earth's mantle predate the Moon and did not chemically equilibrate metal and silicate during the giant impact that formed the Moon. [14]

We've quoted what *Science News* and the journal, *Science*, said about the discovery. Here's what the authors of the study themselves said,

> Variability in $^{182}W/^{184}W$ ratios reflects Hf/W fractionation while ^{182}Hf was extant. Hf/W fractionation has been observed in early solar system materials, so variable W isotopic compositions in terrestrial samples can reflect the imperfect mixing of late additions of such materials. The $\mu^{182}W$ value of +48 for Baffin Bay sample Pd-2, however, is larger than can be accounted for by this process, and so this possibility is discounted (supplementary text). Hf/W fractionation can also occur as the result of endogenous Earth differentiation processes, such as magma ocean crystallization and core formation. However, silicate fractionation processes cannot be responsible for the generation of the anomalous ^{182}W in the sources of the Baffin Bay and Ontong Java lavas. If the high $\mu^{182}W$ was due to silicate fractionation in a magma ocean while ^{182}Hf was extant, then $\mu^{182}W$ should positively correlate with $\mu^{142}Nd$, the decay product of the short-lived ^{146}Sm ($t_{1/2}$ = 103 million years) isotope system. Instead, the $\mu^{142}Nd$ values of the samples are indistinguishable from all other modern basalts measured so far (fig. S3 and table S5). [15]

We could not have said it better ourselves! ☺ Well, maybe we could. That's why we quoted the other authors and tried to explain it ourselves. ☺

[11] Dahl, *Science*, 13 May 2016, "Identifying remnants of early Earth", pp. 768-769, http://science.sciencemag.org/content/352/6287/768.full

[12] https://en.wikipedia.org/wiki/Hafnium

[13] *ibid.*

[14] Dahl, *Science*, 13 May 2016, "Identifying remnants of early Earth", pp. 768-769, http://science.sciencemag.org/content/352/6287/768.full

[15] Rizo, *et al.*, *Science*, 13 May 2016, "Preservation of Earth-forming events in the tungsten isotopic composition of modern flood basalts", pp. 809-812, http://science.sciencemag.org/content/352/6287/809.full

by Lothar Janetzko

Science and Creation

http://www.science-creation.com/science.htm

Scientific Evidence for Creation

This month's website review looks at a site that seeks to provide scientific evidence for creation. The website main page is organized by providing nine tabs to the following topics: 1) Home, 2) Scientific Creation, 3) Science, 4) Creation, 5) Hoaxes, 6) Debate, 7) Self-Help, 8) Humor and 9) Contact. As you can tell from the link to the website, the material for discussion is found on the Science tab.

Three observations or definitions present an introduction to the material discussed: "1) **Science Verifies Creation.** Evidence for special creation surrounds us. Everywhere from microscopic elements to the unfathomable recesses of the Universe. This website is a collection of unbiased evidence supporting Creation., 2) **Scientific evidence**: Verifiable measurements or observations that support or oppose possible physical explanations and 3) **The Law of Biogenesis:** Living things come only from living things (life arises from pre-existing life, not from nonliving material)".

What follows are a few questions the website author asks to try to point out to the reader that the technology in use during Darwin's time led Darwin to make wrong conclusions about the complexity of living cells. The microscope Darwin used provided 850x magnification. At this magnification "Darwin saw a primitive, rounded glob of matter called 'protoplasm'. He thought it consisted of a few elementary components that could be easily assembled." The electron microscopes we use today provide a maximum magnification of 10,000,000, showing us that even bacteria "contain complex molecular machines, each bacterium being more like a sophisticated automobile factory with multiple robotic devices and a complex control center."

What follows next on the page are links to a number of videos that provide interesting insights into the Evolution versus Creation Debate. Additional links cover topics such as 1) The Improbability of Abiogenesis, 2) The Top 30 Problems with the Big Bang, and 3) Intelligent Design in Nature.

We have just discussed what is found on one of the tabs of the website. Just select one of the other tabs to explore additional material that you may find helpful in gaining a better understanding of the issues involved when discussing creation and evolution.

On a lighter note, the Humor tab provides some cute jokes, especially the section with the title "Church Ladies with Typewriters".