

9 January 2009

True or False Questions

1. ___T___F - The impact of two airplanes destroyed the World Trade Center on 9/11/2001.
2. ___T___F - TNT has more energy than gasoline.
3. ___T___F - Metal detectors detect metal.
4. ___T___F - A one kiloton atomic bomb detonated in Central Park would destroy New York City.
5. ___T___F - It is very likely a terrorist group, such as Al-Qaeda, will soon build a nuclear bomb.
6. ___T___F - It is much more difficult to engineer or alter a bacterium for a biological terror attack than to build or detonate an atomic weapon.
7. ___T___F - A biological weapons attack would be easy.
8. ___T___F - Liquid Hydrogen, the key fuel for the "hydrogen economy," has 4.5 times more energy per gallon than gasoline.
9. ___T___F - Cars could be solar powered.
10. ___T___F - Cars and trucks use most of the petroleum in America.
11. ___T___F - Most of America's energy comes from foreign oil.
12. ___T___F - Household solar panels will pay for themselves quickly.
13. ___T___F - The world will run out of oil.
14. ___T___F - Oil has never been more expensive than it was in mid-2008.
15. ___T___F - Natural radiation is harmless; manmade radiation is harmful.
16. ___T___F - Over 20,000 survivors of the Hiroshima atomic bomb died of cancer which was caused by the bomb.
17. ___T___F - The region around Chernobyl was destroyed by the nuclear power reactor explosion, which killed thousands of local residents, and will remain uninhabitable for thousands of years.
18. ___T___F - No citizen of the U.S.A. is exposed to radiation levels as high as those required after the cleanup of any radioactive spill.
19. ___T___F - Dental X-Rays cause cancer.
20. ___T___F - Iran's nuclear program's uranium enrichment centrifuge complex would be easy to target and destroy.
21. ___T___F - Nuclear fusion has never been achieved.
22. ___T___F - America's atomic weapons design information is top secret.
23. ___T___F - Iraq never had a program to develop nuclear weapons.
24. ___T___F - A nuclear reactor used to generate electricity is the same as an atomic bomb; it is just waiting to explode.
25. ___T___F - It is impossible to design and build a safe nuclear reactor to generate electricity.
26. ___T___F - Generating electricity from nuclear power requires storing the spent fuel rods for 100,000 years in perfect safety.
27. ___T___F - Drinking water in the U.S.A. is safe from radioactive contamination.
28. ___T___F - Cold fusion is impossible.
29. ___T___F - Spy satellites can read license plates.
30. ___T___F - The U.S.A. has enough spy satellites to capture an image of any place on the planet at any time in an on-demand basis.
31. ___T___F - The GPS system in your car or your backpack communicates with the GPS satellites to determine your position.
32. ___T___F - Stealth airplanes and ships avoid detection by absorbing radar.
33. ___T___F - It is warmer now than it was in 1998.
34. ___T___F - We will never have another ice age.
35. ___T___F - It requires huge temperature differences to change the climate on earth.
36. ___T___F - The earth's temperature was stable for the last 12,000 years until the industrial revolution.
37. ___T___F - The greenhouse effect is bogus.
38. ___T___F - There have always been natural fluctuations in the level of carbon dioxide in the atmosphere; current levels are just another natural variation.
39. ___T___F - Carbon dioxide (CO₂) is required by plants to make oxygen via photosynthesis, thus, more CO₂ is good for the planet.

What You Know - True or False

40. ___T___F - Scientists' computer models can accurately predict global warming.
41. ___T___F - The U.S.A. is the world's largest producer of CO₂.
42. ___T___F - The earth has gotten much warmer.
43. ___T___F - The world's scientists are in consensus that global warming is indisputably true and caused by humans.
44. ___T___F - The melting of the Antarctic ice proves global warming is happening.
45. ___T___F - The cost of hurricane damage has been increasing for the last century; more extreme weather is a result of, and proves, global warming.
46. ___T___F - The number of hurricanes hitting the U.S.A. has increased over the last century; more extreme weather is a result of, and proves, global warming.
47. ___T___F - The number of severe tornados in the U.S.A. has been increasing; more extreme weather is a result of, and proves, global warming.
48. ___T___F - The number of wildfires in the U.S.A. has been increasing; more extreme weather related events are a result of, and prove, global warming.
49. ___T___F - Scientist Michael Mann's "hockey stick" chart of average temperatures in the northern hemisphere for the last 1,000 years conclusively proves global warming and its direct cause by humans.
50. ___T___F - If the U.S.A. cut its greenhouse gas emissions, there would be no global warming.
51. ___T___F - Hydrogen fuel will save us from global warming.
52. ___T___F - Conservative politicians killed the Kyoto Protocol in the U.S.A.
53. ___T___F - The U.S.A. is the most polluting country on the planet.
54. ___T___F - Fluorescent light bulbs and more efficient appliances are a waste of time and will have no effect on global warming.
55. ___T___F - The global population explosion will overwhelm any attempts to control global warming.
56. ___T___F - Corn based ethanol will save us from global warming.
57. ___T___F - A high technology solution will save us from global warming.
58. ___T___F - Wind turbines can save us from global warming.
59. ___T___F - Conservation can save us from global warming.
60. ___T___F - If the U.S.A. disappeared tomorrow, the planet would be saved.
61. ___T___F - The world's problems are caused by petroleum.
62. ___T___F - Global warming is the greatest threat to our planet.
63. ___T___F - Global warming is happening, is man-made and is inevitable.

Answers

1. False. The fires from the jet fuel destroyed the buildings.
2. False. Gasoline has 15 times the energy of TNT.
3. False. Metal detectors detect magnets. The metal detector is a big electromagnet and thus turns any metal inside its loop into a magnet, and it then detects that magnet.
4. False. It would do little but blow out the windows in the buildings around the park. The blast radius of a one kiloton atomic bomb is only about 450 feet.
5. False. A nuclear bomb is extremely difficult to engineer, construct and successfully explode. Just ask North Korea. Their vaunted nuclear bomb test turned out to yield less than one kiloton, but was probably designed to yield at least 20 kilotons. In other words, the North Korean bomb was a dud.
6. False. Just about any graduate student can create a killer bug. As noted, it is very difficult to design, engineer, build and successfully detonate an atomic weapon.
7. False. It is challenging to successfully disperse a non-propagating (meaning one that infects and kills only the initial victim) biological weapon over a large population in lethal doses.
8. False. Gasoline has 4.5 times more energy per gallon than liquid hydrogen.
9. False. Solar energy is about one horsepower per square meter (roughly one square yard). Even if you covered every square inch of your car with 100% efficient solar panels, you could only produce a few horsepower.
10. False. Transportation, including aviation, uses 28% of the petroleum in America.
11. False. Foreign oil provides 29% of America's energy.
12. False. Electricity in the U.S.A. is very cheap to buy from utilities, consequently payback for solar panels with today's costs and efficiency (typically ~15%) would take about 22 years.
13. False. Due to the dynamics of supply and demand, diminishing supplies will cause higher prices which will enable alternative fuels, which will further reduce demand. In addition, market-price-viable oil can be created from coal at any cost of oil above \$50 per barrel, and we won't run out of coal for between several hundred and 1,000 years, depending on demand.
14. False. In constant dollars adjusted for inflation, gasoline cost the same in mid 2008 as in the early 1980s.
15. False. There is no difference between natural and man made radiation.
16. False. Humans have a 20% chance of dying from cancer even when exposed to no man made radiation. Of the 100,000 survivors, 20,000 died from naturally caused cancers. The radiation exposure from the bomb caused an estimated additional 800 cancer deaths.
17. False. Only the reactor itself was destroyed by fire, not an atomic bomb type explosion. The 30,000 residents evacuated received about 45 rem of radiation exposure. That level of exposure would have led to an additional 500 cancer deaths on top of the 6,000 naturally occurring cancers. The area is now showing a 1 rem per year level of radiation, a level some would no doubt define as an acceptable risk.
18. False. In the event of a spill, the radiation must be reduced to a level of 0.025 rem. The average American is exposed to 0.2 rem of natural radiation a year.
19. False. Dental X-Rays have a dose of 1/1000 rem, about the same radiation your tooth (and body) receive in two days of exposure to the world's natural radiation.
20. False. A typical centrifuge plant has thousands of centrifuges but the entire collection fits easily into a building the size of a movie theater.
21. False. Thermonuclear (hydrogen) bombs, create nuclear fusion.
22. False. The information on the design and manufacture of America's atomic weapons was released to the public, and the world, in the 1950s "Atoms for Peace" program under President Eisenhower in exchange for the nuclear weapon non-proliferation agreements.
23. False. Iraq had an active nuclear weapons program prior to Iraq's invasion of Kuwait. Uranium enrichment equipment, specifically calutrons, were discovered and destroyed by U.N. inspectors subsequent to the war. The U.N. estimated Iraq had achieved 35% enrichment, and the remaining steps to bomb-grade U-235 are "easy," (at least for atomic weapons people) so the evaluation was that Iraq would have soon had an operational uranium based atomic weapon.
24. False. Nuclear reactors used for generating electricity are not capable of exploding like an atomic bomb.
25. False. A pebble bed reactor is intrinsically safe against meltdown, explosion and fire. In addition, the hundreds of nuclear power plants in operation around the world using older

What You Know - True or False

designs have operated for decades with only two major accidents: Three Mile Island (pump failure followed by human and process error) and Chernobyl (design flaws, operator and process error).

26. False. After 300 years the radioactivity of the spent fuel rods will have decreased by a factor of 10. At that point, the radioactivity will be 100 times as strong as the uranium mined out of the ground to fuel the reactor and the radiation levels will continue to decrease. That level of radioactivity and length of time is manageable with current technologies and known facts.
27. False. The Colorado River, a primary source of drinking water for Los Angeles and San Diego, is drained from a geologically active region, full of faults and fissures, containing about a billion tons of uranium. The radioactivity in this uranium is 20 times the legal limit for the proposed nuclear fuel storage facility at Yucca Mountain, Nevada.
28. False. Cold fusion, the fusing of atoms at low temperatures, was discovered in 1957 by Luis Alvarez using hydrogen nuclei and a muon particle. Scientists have been working ever since to sustain the fusion and create a chain reaction.
29. False. The fundamental physics of light prevent it from the altitude of a spy satellite.
30. False. Such capability would require a constellation of about 5,000 satellites.
31. False. GPS receivers are receivers, they only receive the signals of the satellites, they do not transmit anything.
32. False. The primary way stealth vehicles and devices accomplish that goal is the way they reflect radar signals, not by absorbing them.
33. False. Average temperatures have been lower in every year since 1998, but remain the highest they have been in 400 years.
34. False. Ice ages have happened roughly every 12,000 years on a quasi-100,000 year cycle due to variations in the earth's orbit and corresponding changes in the sunlight received by the Northern Hemisphere.
35. False. There is only a 12 degree (F) difference between the last ice age and the average temperatures we've enjoyed for the last 12,000 years.
36. False. Temperatures have varied dramatically, by more than six degrees (F), since humans began cultivating crops 10,000 years ago.
37. False. The greenhouse effect is real and indisputable. It is the same phenomenon you experience when you walk into a greenhouse or get into your car on a sunny day with the windows rolled up. In the earth's case, the atmosphere forms a blanket that contains the planet's heat energy.
38. False. From around 800 C.E. until the late 1800s C.E. the carbon dioxide level in the atmosphere was 280 parts per million (ppm). Since the late 1800s the carbon dioxide level in the atmosphere has risen to 380 ppm. The industrial revolution, and the corresponding burning of carbon-based fossil fuels such as coal and petroleum, began in the 1800s.
39. False. More CO₂ makes the atmosphere's greenhouse blanket more effective, trapping more heat in the atmosphere. Some additional heat may be OK, but lots of heat is almost certainly going to disrupt life as we know it in meaningful ways.
40. False. The models are incapable of accurately modeling (calculating) cloud formation and systems, leading to huge uncertainties.
41. False. China is the largest producer of CO₂. China is building the equivalent of 50 to 70 new gigawatt (very large) coal burning electricity generating plants a year. Just one gigawatt coal plant burns a ton of coal every 10 seconds. That equals 3 tons of carbon dioxide emissions every 10 seconds for every plant.
42. False. The earth's temperature has increased two degrees (F) in the last century. The temperature has increased about one degree (F) since 1957.
43. Close, but false. The Intergovernmental Panel on Climate Change (IPCC), commissioned by the U.N. and the World Meteorological Organization, consists of hundreds of scientists, diplomats and politicians. It shared the 2007 Nobel Peace Prize for its work on global warming. It issues periodical reports on the global warming issue. In 2007, its conclusion was that they are 95% confident that global warming is happening and 90% confident that at least some of the global warming is due to human activity. That translates to a 10% chance that none of the global warming is due to human activity. In its 2001 report the IPCC stated that there was a 66% probability that at least some of the warming was attributable to human activity. Scientific standards for physics require 95% probability before a theory can be submitted as a paper in a peer reviewed scientific journal. Some scientists believe the IPCC has been swayed by political pressure from both the scientific community and societal politics.

What You Know - True or False

- Some scientists believe the IPCC has been politically swayed to be incorrectly cautious and other scientists believe the IPCC has been politically swayed to be incorrectly over-ambitious.
44. Interestingly and counter-intuitively, false. Global warming climate models all agree that one effect will be increased moisture in the atmosphere. Even with dramatic warming at the poles, the poles will still be below freezing, so the increased moisture will fall as snow, and actually increase the polar ice cap.
 45. False. Using constant dollars (adjusted for inflation), a standard requirement in business and any undergraduate college course, as well as adjusting for the increased number of people living near the coasts, costs for hurricane damage in the U.S.A. have not changed in the last century. [editor's comment: Knowingly using a monetary based timeline chart that does not include constant dollars to level out the effects of inflation would yield an F for a college undergraduate student and the loss of your job as an analyst. It is simply the most fundamental thing in this analysis. The use of a monetary based timeline chart for the purpose of influencing public policy that does not include a correction for inflation in constant dollars calls into question motives and destroys the credibility of all concerned.]
 46. False. Using a count of the number of hurricanes that made landfall, which is an unbiased, non-skewed data set unaffected by increased ability to spot and track hurricanes at sea, there has been no increase in hurricanes making landfall in the U.S.A. In fact, there has been a decrease, especially in the most violent storms, category 4 & 5.
 47. False. Based on National Oceanic and Atmospheric Administration (NOAA) data, the number of strong to violent tornados (F3-F5) has been slowly decreasing for the last 55 years.
 48. False. Based on National Oceanic and Atmospheric Administration (NOAA) data, the number of wildfires has been steadily decreasing for the last 26 years.
 49. False. Although prominently featured in the 2001 IPCC report and in the movie *An Inconvenient Truth* that won Al Gore a share of the 2007 Nobel Peace Prize, the chart has subsequently been shown to be based on biased data created by minimizing data that did not support the "hockey stick" result, and emphasizing data that did. The National Research Council of the U.S. National Academy of Sciences conducted a review of Mr. Mann's work and concluded that there was nothing in his work that they could support, other than that the use of the statistical method of principal component analysis (PCA) was a good idea, but Mr. Mann had not implemented PCA in its standard form or correctly utilized its algorithms.
 50. False. If the U.S.A. permanently cut its carbon dioxide emissions to a level 20% below the level of 2000, the growth in output of carbon dioxide from China and India (primarily from burning coal) would cancel out the U.S.A.'s reduced emissions in three years.
 51. False. Hydrogen is not a source of energy, it is only a method of transporting energy. We cannot mine hydrogen, we must produce it from other substances. Producing it requires energy. It is difficult to create hydrogen in a way that doesn't cost more energy than the hydrogen yields. In addition, hydrogen is not particularly dense in energy, and it takes a tremendous volume to store meaningful amounts of it. For instance, if you fill a standard 15 gallon automobile tank with hydrogen gas, the tank would only yield an operational range of 15 to 45 miles, depending on the vehicle design.
 52. False. Although signed by then Vice President Al Gore in the Clinton administration, the Kyoto Protocol was never presented for a ratifying vote by either the Clinton or Bush administrations. The only senate vote related to the Kyoto Protocol was a 95-0 passage vote, fully bipartisan, on the Byrd-Hagel Resolution that requires binding targets and timetables on developing nations, including China and India, prior to ratification.
 53. False. The U.S.A. produces 0.55 tons of carbon dioxide per \$1,000 of GDP. The EU-15 produces 0.48. India produces 1.88 and China produces 3.14. The world's developing countries currently produce about twice as much total carbon emissions annually as the U.S.A. and their rate of emission is rapidly increasing.
 54. False. If the U.S.A. currently used 1974 era less-efficient refrigerators, 23 additional gigawatt electrical generating plants would be required to meet the demand. Little things add up, even light bulbs and especially appliances.
 55. False. The myth of the population bomb is popular and widely held, but erroneous. When societies become developed and educated, they stop reproducing. The biggest single factor is the education of women, even to the 6th grade level. The societies of Japan and Western Europe are already declining in population. In addition, Russia's population is shrinking very rapidly. The U.N. estimates that the world population will peak sometime in this century at 9 to 10 billion people and then slowly decline.

What You Know - True or False

56. False. Ethanol created from sugar cane is a viable alternative, but corn is not a terribly efficient feed stock for ethanol production. Unfortunately, unlike Brazil, which achieved energy independence using sugar cane based ethanol, the U.S.A. does not have a climate conducive to large scale production of sugar cane. Ethanol will be a much more viable and attractive alternative fuel once microorganisms are bioengineered to convert plant cellulose directly to ethanol or other alcohols, which will enable the use of plants such as switchgrass, which grow well in the climate of the U.S.A., as a feed stock.
57. False. The challenge is not in the carbon dioxide output of the high-tech-friendly developed countries such as the U.S.A., the challenge is in the carbon dioxide output of relatively low-tech China and India and other developing nations. Any solution must compete with the cost of coal in China, which is very, very low. Any solution must also compete on a strategic, geopolitical level with a very low cost fuel—coal—of which China has centuries of supply under its own soil.
58. False. According to an estimate by Nate Lewis, an energy expert at Caltech, it would be possible to generate 2,000 gigawatts around the globe using wind power. That is only about 15% of the world's current energy use.
59. True. From 1845 to 1998 the amount of energy required to produce a dollar of GDP in the U.S.A. dropped by an average of 1% a year. In response to the 1970s oil crisis, the U.S.A. increased conservation by 4% a year. We currently waste so much energy that with little effort, meaning conservation that is comfortable, that we wouldn't even notice and would not appreciably affect our comfortable lifestyles, we could sustain a 2% rate of increase indefinitely. Compounded over 55 years our energy efficiency would be tripled, meaning we would use only a third of the energy for the same productivity. Conservation works here and it works equally well in developing countries. It is low cost, in fact it pays economic dividends; as well as increasing rather than decreasing national security.
60. False. Even if the U.S.A. disappeared tomorrow, the rapidly increasing use of coal by the developing world would soon replace all of the U.S.A.'s carbon emissions.
61. False. Petroleum (oil) is not the problem. Coal is the problem. It is cheap, easy to obtain and easy to burn. It also has the greatest effect on the world's output of carbon dioxide, the primary component of greenhouse gasses. It is also in abundant supply in the countries that stand to use the most of it: China and the U.S.A., as well as Russia.
62. Possibly false. The acidification of the oceans caused by increasing carbon dioxide levels in the atmosphere may create an even greater environmental catastrophe, but it's a lot harder to get heart-rending video of a dying coral than of a polar bear.
63. Apparently, probably and false. There is clear and convincing evidence that temperatures are higher now than any time in the last 400 years. This may be a simple and normal cycle of temperatures that the earth goes through, or it might not.

But, it is hard for anyone to deny that pumping billions of tons of carbon dioxide into the atmosphere for centuries will have an affect on things. In that sense we are, in effect, playing Russian roulette with the atmosphere and the earth. We may be getting blank chambers in the revolver now, but the curves on the graphs of carbon dioxide concentrations in the atmosphere are nearly vertical, and we haven't even gotten China and India completely into the developed-economy game yet. Every few days, when a new coal fired generating plant comes online in China, we are pulling the trigger. Eventually the chamber in the revolver will be loaded.

That doesn't mean we are helpless. We are an inventive and resourceful lot. Just as in going to the moon, all we need is a goal, a timeline, some motivation, a leader to inspire us and the sustained political will to reach the target, and we will get there.

America will, in its inimitable over-compensating way, inevitably get so green so fast it will make the Europeans look like energy spendthrifts. But, that won't be enough—we can't do it alone. We've got to bring the Indians and the Chinese along for the ride.

It's a pretty small planet when you look at it from space, surrounded by all that blackness and a background of stars. And from up there, you notice that there are no national border lines drawn on the ground.

We're all in this together.

What You Know - True or False

How did you do? The point of this true or false quiz is not to change anybody's mind related to any of these issues, especially global warming. The point is to illustrate that what people think they know for sure—things they know are certain facts—about the issues that will define our nation and our planet for the next century, are mostly simply out-and-out wrong. It is important to realize that most of what we think we *know* is true is probably *not* true. Instead, much of what we believe is absolute fact are rumors, second and third hand knowledge, urban legends, assumptions, distortions, bias or blatant mistruths, the last few usually passed to us by fervent, strident believers on one side of an issue or the other. Most of what we watch or read is equally wrong. Most of it is slickly produced propaganda put out by the same group of ideologues on one side of an issue or the other.

It is critically important to seek out the actual, proven, observed and tested facts on these and other issues. Do not settle for what you hear at work, what your friends think or especially what you read on the internet, in the newspaper, in magazines or what you see on television, regardless of the source. Do your own research, utilize multiple sources and draw your own conclusions.

Climate change is an excellent example of the challenge to build a fact based opinion. As illustrated in this short quiz, many of the beliefs related to the issue held as canonical fact by the majority of the population on both sides of the issue are in fact untrue. The sad part is, there is plenty of real, established and unbiased science to form a well founded opinion on global warming and other issues—you don't need the propaganda. All that the distortions and lies accomplish is to inevitably diminish or destroy the reputation and credibility of those who champion them once the truth comes out and, very unfortunately and much more important, distort the necessary public policy decisions regarding these vital issues.

Always remember the first three words of wisdom according to Chinese tradition: "I don't know," and Mark Twain's advice about data and data analysis: "There are lies, damn lies and statistics."

Seek your own truth. Establish your own facts. Avoid stridency and blind allegiance in all forms. And keep asking yourself the most important question: "When was the last time you changed your mind about something meaningful?"

Source - All true/false questions and answers, except for portions of the answers for 45, 55 & 61, are based on the book *Physics for Future Presidents, The Science Behind the Headlines* by Richard A. Muller, a physics professor at UC Berkeley.

These 63 examples are just the tip of the iceberg of the number of new insights the book illuminated and previously held convictions and beliefs it shattered for me. The book forced me to change my mind on several meaningful issues, including, but not limited to, the prospects for salvation via hydrogen. Mr. Muller sticks almost exclusively to known and proven science, and leaves the resulting public policy decisions to the reader. The book is highly accessible and written for a general audience; if you can read a newspaper, you can read this book.

I highly recommend this book, and sincerely hope that all those involved in the public debate and public policies that will define our existence for the next few decades read it carefully.

That includes you.

What You Know - True or False

10 Free Books

I am so confident the book *Physics for Future Presidents, The Science Behind the Headlines* will be a positive, fact-based addition to the discussion on these important topics I will “put my money where my mouth is” and purchase a copy of the book on Amazon or barnesandnoble.com and ship it to the first 8 and the 175th and 501st people who email me at dhackney@eglttd.com that they promise to a) read the entire book, b) read other books on the same topics for alternative points of view, and c) if they find it worthy, recommend the book to their friends, colleagues, public policy makers and family.

(Rules: 1) A free copy of the book *Physics for Future Presidents, The Science Behind the Headlines* will be shipped to the first 8 and the 175th and 501st unique source email address with messages containing the promises that hit my inbox. 2) You must include your full name, shipping address and phone number to be a winner. 3) Amazon or barnesandnoble.com must ship to your location to be a winner. 4) Notification, order turnaround and receipt will depend on my access to the internet, which can be bi-weekly or longer depending on our location. 5) One entry per household. 6) I will not disclose to any party or use for any other purpose your name, address and phone information. 7) English language is required. 8) My decisions are final.)

Criticisms:

- Mr. Muller suffers from the common misconception that Hurricane Katrina hit and destroyed New Orleans. Katrina made landfall in Mississippi, while New Orleans suffered little to no direct damage from the hurricane. New Orleans was destroyed by flooding when several levees failed.
- Mr. Muller properly understands the physics involved in dirty bombs, but does not fully appreciate or understand the other reasons a terrorist would use that device, specifically the breakdown of civil order and resulting injuries and deaths caused by widespread panic. This is especially true in concentrated urban metropolises with limited exit routes such as Los Angeles, as discussed in my 2003 ultra-short story, [What Will Be](#).

Full disclosure:

- Although I worked on some of the same projects and programs as Mr. Muller, I did not work with him and have never met him.
- Based on my knowledge and experience, Mr. Muller is authoritative on the physics and science subjects he addresses.
- The book’s publisher, Norton, is not the publisher of any of my past or current books.
- I have no discount deal with amazon or barnesandnoble.com.
- I am not involved in any marketing campaign, guerilla or otherwise, for this book, or in any other way associated with the author, the publisher or the book.
- I paid retail price for my copy of the book at a Barnes & Noble brick & mortar (physical) location in Carlsbad, CA.
- I am from Iowa and have friends and family who depend on corn and ethanol production for their livelihoods. We own cropland in Iowa used to grow corn. Nonetheless, I believe ethanol is best suited for use as a primary alternative fuel when plant cellulose can be directly converted to alcohol via bioengineered organisms.
- I have no axe to grind on any of the issues discussed in the book, but enthusiastically support the method used by physicists to find an unbiased set of data upon which to base analysis, probabilities and conclusions. That is why I named my blog [Autopsis](#), Greek for “seeing with one’s own eyes.”

What You Know - True or False



Photo by Jorge Valdes

Douglas and Stephanie Hackney are on a two to three year global overland expedition, and use solar panels, parasitic electrical generation and a low-energy lifestyle to travel with a small carbon footprint.

You can learn more about their travels at: <http://www.hackneys.com/travel>