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Past Issue Date: 03/08/13  
Theme: "Radon Gas and the Internet"  
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Today's Date: 08/30/13

## Does Repetition on the Internet Make It True?

*Caoimhin Connell has spent his life looking for the truth. The Internet seems to make it more difficult. Is he making progress or merely tilting at windmills? You decide.*

By ComputerEdge Staff

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**Does Repetition on the Internet Make It True?**  
"An E-mail from Caoimhin P. Connell, Forensic Industrial Hygienist"  
by ComputerEdge Staff

Included is the response to the following e-mail from Jack Dunning:

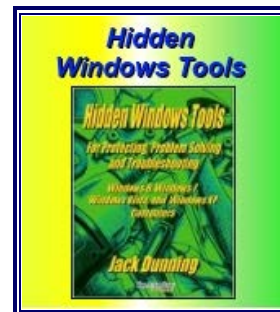
*I was looking into the effects of radon gas, when I came across your article which sounded well-reasoned and unbiased. I then noticed that almost all other information on the Web was a parrot of EPA talking points—word for word. I've since decided to write an article for my online magazine ComputerEdge about how the Web impacts information, especially on controversial topics. Your article seems to be a prime example.*

*My one question for you is whether there have been any more conclusive studies on radon since 2010. I found it difficult to locate anything since there is so much parroted chaff. If you have time, please let me know.*

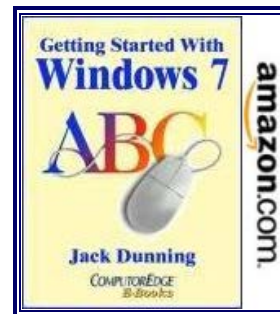
Good morning, Mr. Dunning,

Thank you for the e-mail. Yours is an interesting argument and so let's set aside the radon issue for a moment to see if there is a bigger picture and ask "Does the Internet impact thinking?" Or, is it valid to expand the question to an even larger issue? Could the bigger question be "Has a flawed mind-set on how information is presented been magnified by the Internet?"

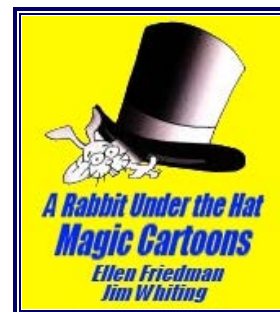
Western Society has come to view scientific publications in peer reviewed journals as reliable science; and an accurate reflection of objective observable



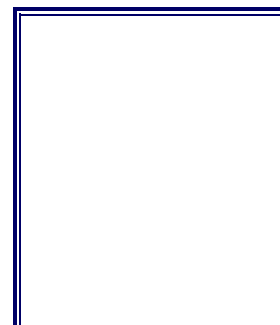
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fact and even scientific consensus.

Historically, this view was justifiable and "scientific studies" were indeed reliable; because they were thought-based and objective. However, starting in the late Sixties, a troubling trend began to emerge; the occasional scientific paper was retracted, ostensibly due to an honest error. Then, more papers were being retracted due to duplicate publications and plagiarism. This type of questionable conduct gave way to methodical misconduct; and eventually outright scientific fraud. More and more, we have seen this very troubling trend continue, which has not undermined the traditional confidence attributed to scientific studies even though the information in those studies has become less reliable.

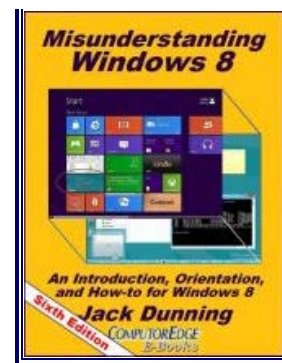
This trend has also produced a new type of scientific practitioner; the "[Tautologist](#)." Is scientific tautology a threat to thinking?

You are probably aware of the austere nature of the U.S. National Academy of Sciences. The Proceedings of the National Academy of Sciences is arguably one of those still-reliable sources of objective and sound science. Therefore, when a paper appeared in The Proceedings a couple of months ago (October 16, 2012 edition (Vol. 109, No. 42) titled "Misconduct Accounts for the Majority of Retracted Scientific Publications" (Fang FC, Steen RG, Casadevall A), it should have been particularly noteworthy. The authors revealed that the most common reason for retraction of 2,047 peer reviewed articles was fraud/suspected fraud, and that information becomes very important in the war against tautology, since those are the very papers that gain their credibility through repetitive citation, not content. That is, if one repeats a false statement enough, and is repeated by a growing number of tautologists, then the false information becomes accepted. Nothing new there—but has the Internet magnified the problem?

So, we need to ask ourselves, which came first; the Internet or the fraudulent trend in scientific papers?

In the late 1980s, I was an analytical chemist with a research institute that was asked by the U.S. Centers for Disease Control to participate in a national proficiency "round robin" for analyzing elemental lead in whole blood using atomic absorption spectroscopy. A total of 84 labs from across the country agreed to participate. When the results were published, my laboratory was the only lab which was declared "non-proficient" since my results were outside of the relative Gaussian score (greater than two standard deviations) from all the other laboratories. My work was called into question by my laboratory director, who was concerned about the "error" I had obviously made, since my work was not in agreement with that of 83 other laboratories.

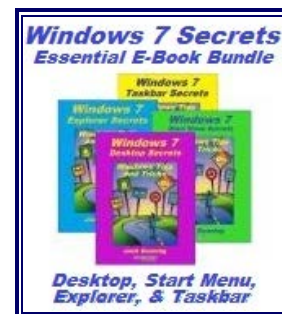
I won't go into all the details at this point, but eventually the issue was resolved—it was found that 83 laboratories across the country had all referenced (sole sourced) a flawed analytical method. Only one of the analysts (me), took the time to initially sit down, and ask the necessary analytical question, and develop a method for the analysis of lead in blood. At the end of the day, it was discovered that 83 laboratories all got the same (wrong) answer, because they all used the same (flawed) reference. One chemist, got the right answer, because only one chemist thought the question through. A real-life example of



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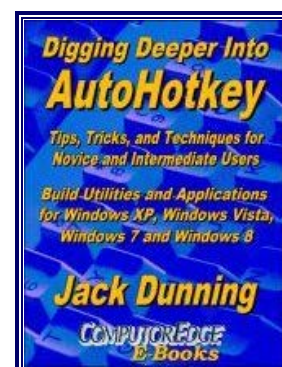
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tautology in motion before the Internet. Of course, I too had done a state-of-the-art literature search and found a copy of the flawed method—however, I did something none of the other analysts did; I tested the validity of the method in my laboratory and found the method was flawed, so I rejected the method that was blindly accepted by my peers, and developed a different method.

A similar event reoccurred ten years later over the issue surrounding the imaginary "toxic black mold," *Stachybotrys atra*. Curiously, I was working for a different organization, but under the same laboratory director when an article appeared in the US CDC Morbidity and Mortality Weekly Report (MMWR) titled Acute Pulmonary Hemorrhage/Hemosiderosis Among Infants — Cleveland, January 1993–November 1994. (Dearborn DG, et al.. MMWR December 09, 1994 / 43(48);881-883). This article was the fraudulent and disastrous publication that launched the "toxic black mold" scare from which the American public has yet to fully recover.

At the time of the publication, virtually none of my colleagues actually read the MMWR article but rather, merely accepted the conclusions of the authors as found in the short abstract. Worst still, being tautologists, they began to reference the article over and over the abstract, then worse still, began to interpret what they presumed the article may have said and we began to see meta-abstracts of the findings. It became an elaborate, and well constructed, house of cards.

I, however, did the unthinkable in my profession—I actually read the paper and analyzed the findings. What I found was that the paper was fatally flawed; the conclusions were not supported by the data. At the time, the asbestos issue was dying down, and Industrial Hygienists were scrambling to keep their private practices afloat—and "toxic mold" was just the boat they had been hoping for. The scare was on, and there was cash to be made.

The American Conference of Governmental Industrial Hygienists (ACGIH) had recently launched a new Internet phenomenon called a "chat-board." I went onto the chat-board, and discussed my findings, and the flawed nature of the MMWR paper. The issue became so violently contentious, the ACGIH shut down the chat-board; permanently.

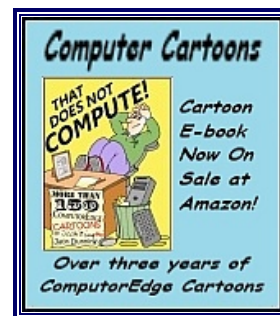
While my learned colleagues had dollar signs in their eyes and began running around testing for "toxic mold" thus cashing in on the emerging issue, I stuck to the science, and once again became a pariah in my scientific community. Up to the point of very nearly being fired from my senior position because I would not swallow the story, my Boss (forgetting our past situation) sat me in his office and asked me "So you think you are right and the rest of the world is wrong, including the US Centers for Disease Control?" I asked my Boss if he had actually read the paper that was causing the stir, and even he admitted that he had not read the article. My Boss stated that he did not have to read the article since MMWR was sufficiently respectable to merely believe the abstract. The MMWR would not publish junk-science, therefore, I must be wrong.

Ultimately, of course, the US Centers for Disease Control announced the "errors" in the paper (including fabricated data—scientific fraud), retracted the "toxic mold" paper, and apologized for publishing junk-science. As finally admitted by the US CDC in March of 2000, the CDC concluded they had been mistaken in reporting that "toxic molds" in general and *Stachybotrys* in particular responsible for the earlier reported illnesses. Two international scientific communities had been convened to look at the original report, and in a March 2000 statement, the CDC stated:

*Both groups of reviewers concluded that the available evidence does not substantiate the reported epidemiologic associations—between household water damage and AIPH or between household fungi and AIPH—or any inferences regarding causality. (US Centers for Disease MMWR Update: Pulmonary Hemorrhage /Hemosiderosis Among Infants — Cleveland, Ohio,*



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1993–1996, *MMWR*, Vol. 49, No. 9, March 10, 2000)

You can read the whole story at [Forensic Applications' Web site](#).

But for almost seven years, the entire Industrial Hygiene community through the winds of Internet tautology, fanned the flames of fraud and fear, and billions of dollars were unnecessarily spent on addressing an imaginary "toxic mold." To this day (and up to just last week), I continue to oppose and testify against my colleagues who still haven't read the original report, let alone the retraction, and who still reference the now discredited and withdrawn report.

At the heart of the failure of the appropriate scientific communities to be the gatekeeper of good science, was an abdication of sound analytical thinking, driven in part by the desire to make a lot of money as quickly as possible before the gravy train ran out—honesty and integrity be damned. (You should be aware that I was removed from a teaching position at a college for refusing to remove a 20 minute segment from my curriculum on "ethics." I was told by the college administration that: "Ethics has no place in today's curriculum.")

Scientific fraud, magnified by the Scientific Tautologist is continuing to this very day. Consider the very recent scientific fraud perpetuated through the National Jewish Hospital paper authored by Dr. John Martyny. Released in September of last year, the paper made an instant splash across the globe, and within a day, my office was receiving communications from as far away as England regarding the paper. Law enforcement communities across the globe have latched on to the paper, and through reliance on a false argument of "authority" they are perpetuating the fabrication through tautology in the Internet (although they have never read the paper, and generally lack the technical ability to understand the issues at hand). If you are interested you may see more in "[Mould Hazards in Marijuana Growing Operations](#)."

I serve on a Federally funded Health and Medical advisory board, and we are currently tackling the problem of this case of scientific fraud since it was funded by US Federal Taxpayer's monies.

In your e-mail, you ask the question: "My one question for you is whether there have been any more conclusive studies on radon since 2010." But in fact, should the better question be "Have there been *any* legitimate scientific studies as of today, February 25, 2013, that have ever shown that residential radon poses a health risk?" Remember, buried deep in the EPA risk estimates, the EPA acknowledges that they don't have any such studies, and indeed—all the pertinent studies they do have indicate that as concentrations of residential radon goes up, lung cancer rates go down. Nowhere does the EPA state they have any data that demonstrates the risk that underpins their policy statement—and an entire house of cards, now being cited by other agencies, and other governments has been built upon a risk model that has been resoundingly rejected by legitimate (honest) scientists who have knowledge of such issues.

Look at similar nonsense from just this year on the Internet:

From EmaxHealth, "[Lead Poisoning May Be A Criminal Element](#)."

Where on earth did they come up with such nonsense? Follow the tautology, and see if you can find the parallel in the radon issue:

1) How lead exposure relates to temporal changes in IQ, violent crime, and unwed pregnancy. Nevin R. *Environmental Research* 2000 May; 83(1): 1-22

2) Mr. Nevin then rewrites the same paper (why was it republished?)  
Understanding international crime trends: the legacy of preschool lead exposure. Nevin R *Environmental Research* 2007 Jul; 104(3): 315-36

3) It gets repeated: The social costs of childhood lead exposure in the post-lead

regulation era. Muennig P. Archives of Pediatric & Adolescent Medicine 2009 Sep; 163(9): 844-49

4) And repeated: Lead poisoning: the epidemic hitting the US juvenile justice system. Miller S. International Journal of Liability and Scientific Enquiry 2013; 5:213-20

5) Then meta-analyzed by Ms. Deborah Mitchell on February 13, 2013 (at 6:54am) for eMaxHealth Internet magazine who falsely "references" the Centers for Disease Control and Prevention, and within a couple of days it was appearing on my professional radar by my colleagues who used it mostly as a good laugh.

Let's look at the birth of a myth. It usually starts with the false assumption that correlation equals causation. I am always amazed at how easy it is to fool the masses with junk science when the authors know the intended audience doesn't know what the words mean. Here, the referenced Nevin study linking tetraethyl lead and crime is "junk science" since the referenced "study" is so full of epidemiological pitfalls as to make a statistician groan with pain. But it contains juicy "gossip" in the form of a five second talking point that helps to increase the probability of being repeated.

Let's look at what the Nevin study says:

*"This study shows a very strong association between preschool blood lead and subsequent crime rate trends over several decades in the USA, Britain, Canada, France, Australia, Finland, Italy, West Germany, and New Zealand. The relationship is characterized by best-fit lags (highest R2 and t-value for blood lead) consistent with neurobehavioral damage in the first year of life and the peak age of offending for index crime, burglary, and violent crime."*

Wow! That sounds very scientific. Then, if that weren't enough, the author added some very scientific looking graphs (which obviously prove just how scientific it really must be).

Here, the entire argument centers on the word "association" which is a valid epidemiological term (and one we often see in the radon issue). The author knows that virtually none of the readers of his abstract will know what the word "association" actually means.

The author knows that virtually all the readers will think that the word "association" means "cause" (as in "cause and effect"). In fact, nothing is further from the truth. "Association" is the stuff used to lead people along a path who otherwise don't understand the realities of statistics.

An "association" is the weakest of all epidemiological evidence. An "association" is needed before one can move on to "correlation" (which is needed to eventually move on to causation). "Correlation" speaks to the strength of the association. But even "correlation" by itself is extremely weak even with good association.

In my early toxicology classes, I used to demonstrate that pickles were the number one factor associated with death in the US. And everything I stated in the lecture was objectively correct. In the end, the student learned that although 100% of all deaths in the US have been "associated" with pickles, pickles didn't actually "cause" a significant number of deaths in the US.

But here, the author uses REALLY "scientific" stuff like saying "The relationship is characterized by best-fit lags (highest R2 and t-value for blood lead)..." WOW, sounds scientific ... but what does it mean?

Let's look at another "scientific" article and see how the pathway leads from eating chocolate to being a serial killer and how scientific correlation gets

abused. In another recent scientific "study" scientists demonstrated that eating chocolate makes you a serial killer.

It starts with an article by Franz Messerli that was published in the New England Journal of Medicine (Chocolate Consumption, Cognitive Function, and Nobel Laureates, Messerli FH N Engl J Med; 367:1562-1564 October 18, 2012 DOI: 10.1056/NEJMon1211064). He correlated data from several countries on Nobel laureates per-capita with the annual per-capita chocolate consumption. Which got picked up by an Internet blog by James Winters and Seán Roberts, "Chocolate Consumption, Traffic Accidents and Serial Killers." They reproduced Messerli's findings but also showed that chocolate consumption per-capita is significantly correlated with the (log-transformed) number of serial and rampage killers per-capita ( $r = 0.52$ ,  $p=0.02$ ).

In the chocolate = Nobel Prize Laureate article, the article says:

"There was a significant linear correlation ( $r=0.791$ ,  $P<0.0001$ ) between chocolate consumption and the number of Nobel laureates."

*Wow!* Now if *that* doesn't prove that chocolate causes Nobel laureates, then what would, and therefore, if that is true, then the chocolate = serial killer is supported, right? After all, 1) there must be association before correlation, 2) there must be correlation before causation, 3)  $r=0.791$ ,  $P=<0.0001$  is not only real fancy mathematics (absolutely necessary to really bamboozle the gullible), but actually is a reasonably good correlation.

Armed with this, it is easy it is to sell the popular (but very wrong) myth: association = correlation = causation. We see it constantly in popular media, (such as the guns cause crime nonsense and the radon causes cancer nonsense); we see it in political discussions—and it is generally assumed to be true; regardless of how wrong the assumption actually is.

Let's look at some other excellent associations and correlations: Last year I gave a series of lectures in toxicology and epidemiological in Huntingdon, England. Here are a [couple of slides](#) from my toxicology lecture.

You'll see that with the same scientific studies and math used to demonstrate that "...a very strong association between preschool blood lead and subsequent crime rate trends over several decades ..." I similarly proved that storks cause babies ( $R^2=0.95$ ) and sunspots cause Canadian lynx (or was it the other way around?) Notice in my examples, that the graphs are every bit as convincing as those used by Mr. Nevins in his "study."

Also notice the  $R^2=0.85$  on Slide 20 and how the correlation statistic is exactly the same, but the graphs demonstrate that the actual correlation in each case is vastly different.

Notice in the "sunspots cause Canadian lynx" there is both positive correlation and negative correlation (*Wow!*...that must *really* be scientific!!)

So, when you see words like "association" "linked" "correlated" etc, in scientific language, pause for a moment and ask yourself why the author didn't use the word "cause."

How does this play out in the radon and Internet issue? Here is a fun [dialogue from the Internet](#) between me and the EPA that explains the issue.

What we see is the Internet is merely the vehicle that places fraud and sloppy thinking on the fast-track. The root of the problem lies with the lack of proper training in our colleges and universities and an abdication of classical analytical thinking skills. To return to the radon issue, this abdication in skills results in non-sense papers such as [one of the papers](#) I reviewed.

So, Mr. Dunning, that is the long answer. Here is the short answer: "Yes." I have attached a more recent paper to this e-mail for your enjoyment.

Before you choose to take on the radon issue, I recommend you read Cervantes' *Don Quixote of La Mancha*, and consider if you have what it takes to tilt with windmills!

Cheers, and good health to you!!

Cheers!  
Caoimhín P. Connell  
Forensic Industrial Hygienist  
[www.forensic-applications.com](http://www.forensic-applications.com)

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## **Comments and Letters about Does Repetition on the Internet Make It True?**

**"An E-mail from Caoimhin P. Connell, Forensic Industrial Hygienist"**  
*by ComputerEdge Staff*

### **Tautology**

*Loved* this article! As a high school English teacher, I must push my students to get away from Wiki-whatever's and to use valid, honest, *primary* sources in their research, including the actual work they are researching. Every year at least one student tries to merely regurgitate other writers' works (often using cut-and-paste) with little or no original thought, and it is an ongoing challenge to teach them proper methodology, especially when there is so much interesting junk on the Internet.

As well as being spot-on, your article was published with perfect timing. My senior class is gearing up to write an analytical, argumentative essay, and the examples in the e-mail (including the need for ethics in research) helped me focus on what I want to discuss on the subject.

Thanks for a timely, intelligent article!

—Maxine Morgan, Ekalaka, MT

### **Tautology**

Brilliant! Connell should write a book about these issues; certainly there seem to be enough examples of sloppy thinking out there (e.g., the current furor about conventional nutritional guidelines and the poor or non-existent science behind them).

—Bill Porter, San Marcos, CA

## Truth at Last

This article proves that what I have believed for years. The so-called scientific studies that "prove" that everything causes cancer is so much BS. I used to get in arguments with my fellow workers because they would jump me for smoking because it "causes" cancer. I knew from my reading that if you didn't already have it in your genes, smoking would not "cause" cancer. It might cause you to get other lung related disease, but not cancer. Remember when the first artificial sweetener was proven to cause cancer in lab rats? They didn't tell you that to get the same results in a human, they would have to drink (I believe) something in the order of 200+ cans of soda per day for years to get the same results. That is why I don't and never will believe any "scientific" study.

—Chris Clarke, Waxhaw, NC

## Associations and Tautology

Fun article. And recently, I noticed a collection of broken computers, each with a mouse attached. There was "a very strong association" between the computers and the mice and therefore you can conclude that mice cause computers to break, right?

In another realm, once upon a time, the Earth was flat, and because the masses believed it, it must have been true. I guess that somewhere along the way it warped because now most people believe that the Earth is not flat. I wonder what the Internet says about that...

—Rob Spahitz, San Diego

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