Open Letter to Canadian Consumers (December 2013)

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You may have read just recently about the unprecedented decision of the scientific journal *Food and Chemical Toxicology* to retract an article published last year by Gilles-Eric Séralini and colleagues from France[1]. In fact, the same journal also retracted a second published article - by a Brazilian team. The two articles have something in common – both identified potential risks to health from GM crops or GM crop technologies.

The purpose of this letter is to provide "the rest of the story", drawing from Paul Harvey's famous radio commentaries, to help you decide whether the safety of your food, and the credibility of the scientific community that you support through your tax dollars, are enhanced by retraction of these papers.

What Is Alarming About The Retraction of Séralini et al. (2012) and Mezzomo et al. (2012)?

The field of genetic modification has generated much controversy within government, academia, and scientific publishing. Corporate gain appears to have fueled the divisive and unscientific prose used by many commentators[2], the personal and professional attacks, and an appalling range of covert strategies to control information in the field of genetically modified (GM) crops. Apart from the personal harm visited upon such distinguished professionals as Arpad Pusztai and Susan Bardocz (Scotland), Ignacio Chapela and Don Huber (US), Irina Ermakova (Russia), Andres Carrasco (Argentina) and Gilles-Eric Séralini (France) – to say nothing of the tragic fate of true Canadian heroes Shiv Chopra and Margaret Hayden – this entire process is denigrating the integrity and credibility of science in the public interest.

The latest disturbing contribution to this sorry state of affairs is the decision by the journal Food and Chemical Toxicology (FCT) and its publisher Elsevier to retract two studies raising concerns about the safety of GM crops. Both studies had been peer reviewed, accepted, and published according to the norms and criteria for publication in FCT. Both studies identified potential risks from GM corn or GM technology, the first from RR corn and the herbicide Roundup itself and the second from several types of Bt toxin, similar to those engineered into Bt insecticidal crops. And then, both were retracted more than a year after publication, within months of the arrival of a former Monsanto employee to the newly created position of associate editor for biotechnology at the FCT journal.

What Was The Rationale For Retracting Séralini et al. (2012)?

Of the two retracted papers, that by Mezzomo et al. (2012) has since been published in another journal[3], so will not be pursued here. The Séralini team, however, has chosen to fight the

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[1] Séralini GE et al (2012). Long term toxicity of a Roundup herbicide and a Roundup-tolerant genetically modified maize. Food and Chemical Toxicology 50(11): 4221-4231.

[2] Cook, G. 2005. *Genetically Modified Language: The Discourse of Arguments for GM Crops and Food*. Routledge.

[3] Mezzomo BP et al (2012). WITHDRAWN: Effects of oral administration of Bacillus thuringiensis as spore-crystal strains Cry1Aa, Cry1Ab, Cry1Ac or Cry2Aa on hematologic and genotoxic endpoints of Swiss albino mice. Food

decision, and many scientists from around the world[4] have joined in – both on behalf of the beleaguered authors and in an effort to shore up the declining fortunes of science in the public interest.

According to the Committee on Publication Ethics, of which FCT is a member, the only valid reasons for retraction are:

- Clear evidence that the findings are unreliable due to misconduct, such as data fabrication, or to honest error
- Plagiarism or redundant publication
- Unethical research.

None of these faults were found in the Séralini paper. See http://www.gmwatch.org/files/Letter_AWHayes_GES.pdf for the Editor's letter to Séralini, and http://www.elsevier.com/editors/policies/article-withdrawal for Elsevier's position.

So how did the Editor-in-Chief A.W. Hayes justify his decision? He said:

> "....the results presented (while not incorrect) are inconclusive, and therefore do not reach the threshold of publication for FCT."

The Editor-in-Chief further stated that he had found

> "... no evidence of fraud or intentional misrepresentation of the data"

but cited concerns with the number of animals per group and the particular breed of rat used in the study.

The issue of rat breed and sample size are red herring arguments, which Séralini and colleagues responded to both in their 2012 paper, and in a subsequent 2013 response paper[5]. Indeed, Séralini had intentionally modelled their study on a Monsanto study[6] which was also published in FCT – same corn, same breed of rats, and same sample size, yet no retraction? The sample size issue has a hefty dose of red herringness, in that the Monsanto study had twice as many actual animals, but then reported biochemical traits for only half of them – producing the same total as in Séralini. And who selected the analyzed half? Accepted OECD protocols for toxicity studies – and a chronic toxicity study is precisely what Séralini et al. did – call for just 10 animals per sex group to be analysed for blood and urine chemistry, the same amount of animals that

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Chem Toxicol. http://www.ncbi.nlm.nih.gov/pubmed/23146696; and Mezzomo BP et al. (2013). Hematotoxicity of Bacillus thuringiensis as spore-crystal strains Cry1Aa, Cry1Ab, Cry1Ac or Cry2Aa in Swiss albino mice. J Hematol Thromb Dis 1(1).

[4] http://www.ensser.org/democratising-science-decision-making/ensser-comments-on-the-retraction-of-the-seralini-et-al-2012-study/

[5] Séralini GE et al. (2013). Answers to critics: Why there is a long term toxicity due to NK603 Roundup-tolerant genetically modified maize and to a Roundup herbicide. Food and Chemical Toxicology 53: 461-468.

[6] Hammond B et al. (2004). Results of a 13 week safety assurance study with rats fed grain from glyphosate tolerant corn. Food Chem Toxicol 42(6): 1003-1014.

Séralini used in his experiment. Claiming after the fact that he should have used 50 animals – the OECD protocol for carcinogenicity studies – is simply muddying the water.

It is simply unheard of to retract an accepted, peer reviewed, published paper just because results are not conclusive. Most scientific papers are not conclusive, but rather, report findings that are then in the public domain for other scientists to read, challenge, repeat, and build on. It is even more dumbfounding that the paper would be retracted more than a year after it was published.

Still unknown is the real reason for why not one but two papers identifying potential harm from GM crops or GM crop technologies – and apparently no other papers - were retracted, within months of the arrival of a former Monsanto employee, to a newly crafted editorial position at FCT.

Red Flags for Scientists and for Society

Retraction of a peer-reviewed paper on the basis of inconclusive results raises several red flags. First, the very notion that a single, pioneering study should be expected to lead to conclusive results is simply incompatible with how scientific research actually proceeds. Retroactively applying this previously unknown standard of *mandatory conclusivity* (yes, there is such a word) to all scientific papers would compel withdrawal of many – even most – existing scientific papers, discourage innovative, pathbreaking research, and retard understanding of complex issues.

A paper that has been submitted and then scrutinized by 3 or more peer reviewers (Seralini, pers comm) and ultimately accepted suggests that the results were of sufficient moment to warrant publication into the public domain. Concerns with methodology, analysis, or interpretation - in the eyes of professional peers - would preclude publication. This did not happen, the paper was approved, and was published. What does the decision to retract say about the purpose/effectiveness of the peer review process?

How should science view the decision to override the outcome of rigorous peer-review and impose the judgement of a de novo post-publication team of unknown professional competence?

The timing of the finding of insufficient conclusivity was more than year after publication of Séralini et al. (2012). Should scientists publishing in FCT face the risk of retraction decisions evolving 2 years after publication? 5 years? Is there a statute of limitations for retraction based on unknown editorial criteria applied retroactively by FCT?

And what about the follow-on studies undertaken as a result of eventually retracted research? What about the tenure and promotion decisions, grants applied for and achieved, and new work undertaken - all as a result of a pivotal study retracted some years later?

Take Home Lesson on Scientific Censorship

So, do you feel safer now that this article has been retracted and removed from the public domain? Are your tax dollars being spent in support of the public interest? If you are a scientist, are you brave enough to undertake research – any research – that might bear on the safety of GM crops? As a policymaker, are you comfortable basing your regulatory and funding decisions on an information flow that has been commandeered by those with a vested interest in commercialization?

This latest effort to control information on GM food safety is reminiscent of George Orwell's lead character in *1984* – Winston Smith – whose job was to rewrite history and airbrush out people/events whenever they became unsavoury in the eyes of the power elite. What confidence can people have in science – and specifically, in the safety of GM foods - when research findings inconsistent with corporate interests can just be airbrushed out?

Correction: An earlier version of this article incorrectly reported that Seralini et al. (2012) had been subject to scrutiny by 5 peer reviewers. According to Seralini, the correct wording should be "at least 3, but the Editor said he had consulted others". I apologize for the error.