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**From:** Joe Minor  
**Sent:** October 28, 2012 5:28 PM  
**To:** clerk@hamilton.ca  
**Subject:** food grown in toxic ditch, Hamilton International Airport

To: All Members of Hamilton City Council c/o the Clerk, the private sector operator of Hamilton International Airport, MOE, OMAFRA, NPCA, others

Please include this message in the official (public released) communications for Council.

I am actually shocked by the poor quality of this response from the Ontario Ministry of the Environment (see attached file "2012-3015.pdf").

If there is anyone out there who has the ability to talk some sense into the Ministry, please give it a try.

Thanks,  
  
Joe Minor

----- Original Message -----  
**Subject:** Please do something  
**Date:** Sun, 28 Oct 2012 16:39:39 -0400  
**From:** Joe Minor  
**To:** Brooks, Susan (ENE) <[Susan.L.Brooks@ontario.ca](mailto:Susan.L.Brooks@ontario.ca)>, [Minister.moe@ontario.ca](mailto:Minister.moe@ontario.ca)

Bill Bardswick  
Jim Bradley  
Ontario Ministry of the Environment

Dear Ministry of the Environment,

**Will the Ontario Ministry of the Environment please actually do something to ensure that another food crop is not grown in the toxic PFOS contaminated Ditch 1, Hamilton International Airport?**

Thank you for your letter (sent via eMAIL) on October 26, 2012.  
  
29/10/2012

For clarity of communication, your letter is reproduced in the attached pdf file (2012-3015.pdf).  
For details of my concerns, please read to the end of this document. In summary:

I am concerned that this perfunctory response from the Ontario Ministry of the Environment fails to propose any actions that would “make sure people’s health and the natural environment is protected” with respect to the many problems caused by growing food crops in a ditch contaminated with toxic levels of PFOS.

Brief review of timeline:

- 1) April 2011: I publicly identify the Hamilton International Airport’s fire fighting practice pad (which is directly upstream of where the food crop was grown) as the source of major PFOS/PFOA contamination to the Welland River.
- 2) May 2<sup>nd</sup>, 2011: An MOE internal memo contains data indicating that the exact location where the food crops are being grown is highly contaminated with many PFCs, including PFOS and PFOA. (Ref.6)
- 3) May 11<sup>th</sup>, 2011: I notify the Ministry of the Environment that food crops are being grown in this area. I express my concerns both with respect to contamination of the crops, as well as the spreading of the contamination in the environment that could be caused by moving farming equipment over the contaminated areas.
- 4) May 19<sup>th</sup>, 2011: MOE testing reveals that toxic levels of PFOS are present in the very spot where the crops were grown. (Ref.7)
- 5) June 3<sup>rd</sup>, 2011: The final conclusion of the first MOE “Surface Water Specialist” is a warning that when PFOS contaminated “sediments are disturbed they can be reintroduced into the water column and result in uptake by aquatic organisms.” (Ref.3)
- 6) August 5<sup>th</sup>, 2011: A second MOE “Surface Water Specialist” warns that the exact location where the crops were grown is so badly contaminated with PFOS that it needed remedial actions, and that these remedial actions should not be delayed. (For obvious reasons, growing food crops in the toxic PFOS contaminated Ditch 1 was not recommended as a remedial action.) (Ref.5)
- 7) May 26<sup>th</sup>, 2012: I once again warn the MOE that a food crop had been planted in the toxic PFOS contaminated ditch. (see below for details)
- 8) October 19<sup>th</sup> and 21<sup>st</sup>, 2012: I express my concerns to the MOE that the food crop planted in the ditch contaminated with toxic levels of PFOS had been harvested, and asked what had been done with the soybean crop that had been harvested out of the toxic PFOS contaminated ditch. (see below for details)
- 9) October 26<sup>th</sup>, 2012: The MOE sends a cursory response (see attached file 2012-3015.pdf). The MOE responded (poorly) to only one of my concerns, and ignored the rest.

In the one page MOE response, the MOE claims it had already “reviewed” the issues. According to the MOE, the results of the review were:

“The ministry has reviewed this issue and found that there are few scientific studies available that investigate the effects of perfluorinated compounds, including perfluorooctane sulfonate (PFOS), on terrestrial plants. We are aware of a recent study done by the United States Environmental Protection Agency that found PFOS had only a “slight effect, not obviously detrimental” to seven common agricultural crops.” (2012-3015.pdf)

It is deeply distressing that the Ministry of the ENVIRONMENT responded so narrowly to my concerns. To respond to the myriad of environmental problems caused by growing food crops in a ditch contaminated with toxic levels of PFOS with an allusion to a single study on plant toxicity is a response unworthy of the Ministry of the

29/10/2012

ENVIRONMENT. The MOE's "review" ignored the conclusions of BOTH of its Surface Water Specialists. It failed to consider the issue of spreading the toxic PFOS contaminated sediments. It failed to consider the extensive scientific literature with respect to the toxicity, persistence, and mostly importantly bioaccumulation of PFOS not only in plants, but in all organisms in the ENVIRONMENT.

Since it is unclear when (or if) the Ministry will conduct a responsible review, I guess we are limited to considering the consequences of the current facile MOE "review".

Since the MOE lists only a single study to support its "review", it would be helpful if the MOE would provide a suitable reference for that study. "A recent study by the US EPA" is not a competent citation. Since I cannot locate this reference using the MOE's deficient information, I cannot tell if the MOE's summary of its contents is accurate. Please provide a complete citation. Or better yet, please send a complete copy of the study.

For discussion purposes, let's assume that the MOE's summary of the study is accurate. The MOE thinks the EPA study says: "PFOS had only a "slight effect, not obviously detrimental" to seven common agricultural crops". Based on this very limited information (and choosing to ignore both of its own Surface Water Specialists) the MOE "review" concluded that there were no concerns with respect to growing food crops in a ditch contaminated with toxic levels of PFOS.

The Ministry of the Environment needs to seriously consider the very bad precedent that will be set if this "review/decision" is not reconsidered. Apparently the MOE "threshold for concern" is not triggered by growing food crops in a ditch contaminated with toxic levels of PFOS. The MOE remains unconcerned even when the toxic PFOS has a detrimental effect on the plants themselves. The MOE will only be concerned when the levels of toxicity are so high that the effects on the plants are "obviously detrimental".

Certainly the MOE will want to reconsider this "review/decision". As it now stands, the MOE is saying that it will allow food crops to be grown, harvested, and sold from ditches that it knows contain toxic levels of contaminants.

**Restated in plain English, the current position of the MOE is that it does not care if food crops are grown in toxic contaminated ditches. Furthermore, the MOE will only begin to care when the crops grown in the toxic contaminated ditches start to look funny (i.e., "an obvious detrimental effect").**

There are many reasons why the MOE can't be serious about allowing this "review/decision" to become MOE policy. For starters, it means that the Ministry of the Environment is being willfully ignorant of a known environmental problem: that PFOS bioaccumulates and biomagnifies in food chains. (These are FOOD crops.....)

Because of the extensive scientific research on PFOS, it is well known that PFOS is persistent, bioaccumulative, and toxic. For this reason, it is marked for "virtual elimination" by both federal law and international treaty. It is difficult to understand how the MOE came to the conclusion that it is "OK" to knowingly put PFOS into the food chain by growing food crops in a ditch it knew (by its own testing) was contaminated with toxic levels of PFOS. I did not think that the MOE wants to go on record that it intends to "virtually eliminate" PFOS from the airport by moving it into our food supply.

As it stands, this "review/decision" means that the MOE can know that food crops were grown toxic contaminated ditches, and then stand by and say nothing when these crops are sold.

The Ontario Ministry of the Environment needs to consult with the Ontario Ministry of Food and Agriculture with respect to the damage that will be done to the reputation of Ontario agriculture if the MOE "review/decision" is not changed.

If it is the general policy of the MOE to not care if food crops are grown in toxic contaminated ditches and then sold, it raises important questions:

How many places in Ontario are there that the MOE knows contain toxic levels of contamination, and allows food crops to be grown, harvested, and sold from the toxic contaminated locations?

Returning the focus to PFOS contamination:

How many places in Ontario are there that the MOE knows contain toxic levels of PFOS, but allows food crops to be grown in the toxic PFOS contaminated ditches?

I am pretty sure that the answer to the last question is ONE (Hamilton International Airport), but please let me

know if I am wrong.

To put this all in perspective:

Good news:

With respect to toxic levels of PFOS contamination, Ditch 1 at the Hamilton International Airport is not the worst place in Canada to grow a food crop.

Bad news:

It is the second to worst spot, and the worst spot (in all of Canada) is directly upstream.

As always, if I am wrong about any of this, please let me know and I will correct my statements. Please include the data that support your views.

Sincerely,

Joe Minor  
PhD, Biology

Details:

Your letter (2012-3015.pdf, attached) was written in response to my eMAIL to you, which for clarity is reproduced at the end of this eMAIL. Your letter states that it is in response to my October 19<sup>th</sup> eMAIL, but on October 21<sup>st</sup>, four days prior to your current letter (dated Oct.25<sup>th</sup>, sent Oct.26<sup>th</sup>) I had sent a more detailed explanation of the problems to you. The more complete October 21<sup>st</sup> eMAIL (which contains the contents of the October 19<sup>th</sup> eMAIL) is what is reproduced below.

I regret to say that the MOE's response is less than satisfactory in several respects.

Many of the issues that I raised seem to have been ignored (again). Furthermore, it does not inspire confidence in the quality of the MOE's "review of the issue" when the MOE response starts by misstating key aspects of my concerns.

Your letter starts by saying that it is in response to my "concerns about harvested soybean crops in the area of the Hamilton Airport".

In contrast, the title of my letter was: "Where are the soybeans from the toxic PFOS contaminated ditch at the Hamilton International Airport?"

The MOE's response got the location wrong, and for unknown reasons managed to delete the fact that the food crop was grown in a ditch contaminated with toxic levels of PFOS.

It is difficult to understand how the MOE got the location wrong. Nowhere did I say my concern was "in the area of the Hamilton Airport".

I pinpointed the location of my concern:

INSIDE THE AIRPORT FENCE AT 43.162825°, -79.941780°

using descriptions, place names (taken from MOE reports), photographs (2), and even geographic coordinates.

It is unclear to me how the MOE was able to miss all of this information.

October 21<sup>st</sup> eMAIL from me to the MOE (copied for reference):

29/10/2012

Where are the soybeans from the toxic PFOS contaminated ditch at the Hamilton International Airport?

To: All Members of Hamilton City Council c/o the Clerk, the private sector operator of Hamilton International Airport, MOE, OMAFRA, NPCA, others

Please include this message in the official (public released) communications for Council.

I am requesting the public's assistance in finding the soybean crop that was harvested from the toxic contaminated Ditch 1a at the Hamilton International Airport. If you know anything about this crop please let me know.

The approximate location of the crop in question was:

43.162825°, -79.941780° (you can paste these coordinates into Google Earth)

This location is just inside the airport fence, north of Airport Road near the southwest corner of the Hamilton International Airport.

This crop was harvested sometime between July 13th, 2012 and October 16<sup>th</sup>, 2012. (Please see attached photos: "120713soybeans" and "121016harvested".)

The concern is that this crop was planted in a location that was known to be badly contaminated with PFCs (including PFOS and PFOA). More details about why this is a concern will follow, but I want to get this request for information out now.

In summary:

Upstream of where this crop was grown is the highly contaminated fire fighting practice pad at the Hamilton International Airport. When there is precipitation, it washes PFOS/PFOA out of the pad. The heavily contaminated water and suspended sediments then travel down Ditch 1 (where the soybeans were planted). What isn't trapped there proceeds downstream to the Welland River and Lake Niapenco (Binbrook Conservation Area). The levels of contamination are so high that the turtles and carp 9 kilometers downstream are the most heavily PFOS contaminated turtles and carp in the world.

The crop that was harvested was planted directly in the path of this heavily contaminated flow of PFOS/PFOA. While surrounding slopes were also planted, the crop on the slopes largely failed due to the drought this summer. A significant portion of the harvested crop only grew because it was growing in the contaminated water and wet soil in the bottom of Ditch 1a.

I do not know why this crop was harvested, because I had previously repeatedly expressed concerns about farming in this badly contaminated ditch.

I first raised this concern during a face to face meeting with Mr.Scremin (Hamilton International Airport) on May 5th, 2011.

I then put these concerns in writing and sent them to Mr.Scremin (HIA), the City, and the MOE on May 11th, 2011:

"Farming. The fields around the practice site are still being farmed (e.g., soybeans). Hopefully the resulting crops are not contaminated, but this needs to be checked. The greatest concern would be for the fields south of the practice pad (along the contaminated creek). I am assuming that these fields are not irrigated from either surface water (e.g., the retention ponds) or groundwater (the well casings). If the fields are not irrigated, the question is how much of the surface soil is contaminated (or not) from shallow water movement along the clay layer. Hopefully the bulk of the contamination is contained by the berm and is released mostly down the creek. Since the sediments in the bottom of the creek (e.g., 43.164101°, -79.941295°) are likely to be contaminated, any equipment that crossed the shallow creek channel could have spread PFOS up the adjacent slopes."

This concern, raised twice a year and a half ago, appears to have been ignored because the next year a new crop was planted in Ditch 1. So I sent my concerns in writing again (to the City and the MOE) on May 26th, 2012:

"It appears that FARMING IS TAKING PLACE both near and IN THE TOXIC CONTAMINATED SITE ITSELF. ... Since data from the Ontario Ministry of the Environment indicates that Ditch 1 is in fact part of the toxic contaminated site (PFOS is present at toxic levels), farming in the toxic contaminated site at the Hamilton International Airport raises several concerns.

First, by plowing in the ditch and then out onto adjacent farmland, PFCs/PFOS are being spread over the farmland.

Second, by disturbing the toxic contaminated Ditch 1, migration of PFCs/PFOS may have been increased (either to surface water, or ground water, or both).

29/10/2012

Third, by allowing farming to take place in a toxic contaminated site, whoever is responsible for the regulation of local agriculture is risking serious damage to the reputation of the quality of Hamilton's local agricultural production.

I do not know what was planted, but I do hope it was not a food crop.

Since I first raised concerns about farming in/near the toxic contaminated site at the Hamilton International Airport about a year ago, it appears that once again my concerns have been ignored.

At a minimum, some responsible government agency (MOE? Agriculture?) needs to establish buffers around the toxic contaminated zones (including Ditch 1). I am shocked that this has not already been done. The fact that this area was contaminated with PFCs/PFOS has been known to regulators either since the 80s (when the toxic materials were first sprayed on the site) or at least since April 2010 (when the operators/regulators "remembered" what had happened at the airport). The public was told about this mess in March 2011 (not by the operators/regulators, but by me). The fact that farming is still being allowed in the toxic contaminated site is inexcusable.

Hamilton needs to move rapidly to ensure that buffers are established around the toxic contaminated zones. The reputation of Hamilton's agriculture is at stake."

So, I am asking for the public's assistance with two things:

- 1) Does anybody know what was done with the crop that was harvested from the toxic contaminated Ditch 1a?
  - 2) Does anybody know what it would take to get reasonable buffers established around Ditch 1?
- If you can help with either of these, please let me know.

Thanks,

Joe Minor

#### SUPPLEMENTAL INFORMATION

The soybean crop was harvested from the toxic PFOS/PFOA contaminated Ditch 1a sometime between July 13<sup>th</sup> and October 16<sup>th</sup>, 2012. The harvest could have been either of the soybeans themselves (possibly for food), or of the entire plants (for animal feed, e.g., silage). Since PFOS biomagnifies up food chains, either type of harvest could be a concern.

Ditch 1a is highly contaminated with PFOS/PFOA, because it is the main conduit between the source of the contamination and the significant contamination that extends from Ditch 1a for more than 50 km downstream (1,2).

In fact, the first (publicly released) sample data that established that the airport was the major source of the PFC pollution to the Welland River was collected not by regulatory authorities, but rather but a volunteer member of the general public. The sample was collected from Ditch 1 just a few meters downstream from where this crop was planted/harvested (4). (The Ministry of the Environment would later label this location "Ditch 1a"). The sample was collected at N 43.16274° W 79.94191°. This sample was submitted to a certified testing laboratory and the Certificate of Analysis **RESULTS OF ANALYSES OF SEDIMENT** was:

Perfluoro-1-Octanesulfonate (PFOS)	170000	ng/kg
Perfluoro-n-Octanoic Acid (PFOA)	4600	ng/kg

The Ontario Ministry of the Environment later released its data for "Ditch 1a" and "HIA Pond" (3). "Ditch 1a" is just a few meters downstream of where the crop was planted/harvested, while the "HIA pond" is about 380m upstream. The MOE reported that the sediment in Ditch 1 was contaminated with 230000 ng/kg of PFOS at Ditch 1a and 1011000 ng/kg at the HIA Pond. The MOE concluded its report (3) with the following statement:

"Existing PFOS contaminated sediment within the Welland River should be considered a potential source of PFOS because

29/10/2012

when sediments are disturbed they can be re-introduced into the water column and result in uptake by aquatic organisms.” (3)

The Hamilton International Airport fire fighting practice pad is the source of significant PFOS contamination that extends for more than 50 km downstream (1,2). The harm done by disturbing the contaminated sediments increases exponentially as one approaches the source of the contamination. In the entire 50 km zone of contamination, there is less than a half kilometer that is closer to the source of contamination than the location where this crop was planted/harvested. The crop planted/harvested upstream of Ditch 1a therefore ranks in the 99+ percentile as the worst place to be planting/harvesting a crop. In fact, since there are huge areas of significantly less contaminated zones off to the sides of the contaminated watercourse (even at HIA), then planting in this location gets a mark of less than 1% for intelligence.

The MOE also measured PFOS contamination of water at locations “Ditch 1a” and “HIA Pond”. Ditch 1a (immediately downstream of where the crop was planted/harvested) was contaminated with 8600 ng/L of PFOS. The HIA Pond was contaminated with 49,000 ng/L of PFOS. In its report (3), the MOE noted that these were toxic levels of PFOS. The airport operator, the City, and the MOE all allowed a crop to be planted in a Ditch that was contaminated with toxic levels of PFOS. The City and the MOE allowed this crop to be harvested even though they had been warned that the crop had been planted in a location containing toxic levels of PFOS. How much lower than 1% should the intelligence score be lowered for these additional failures?

In 2011, the MOE conducted a review of the remedial measures proposed by the private consultant paid by the private sector airport operator (see reference 5). The review included as discussion of the area of Ditch 1 where the crop was (later) planted and harvested:

“Treatment of on-site contamination of surface water in the pond; sediment in the tributary that the pond discharged to; and sediment in on-site tributaries located along the southern and western edges of the property which showed impact are considered “secondary” contamination and remedial options will be investigated after the training pad and pond are remediated. I’m not really satisfied with this as a) the water in the pond can be dealt with at the same time as groundwater is being treated, and b) the on-site ditches will still be contributing PFOS from sediment to surface waters which will be moving off-site. It is likely that cementing the bed of the tributaries won’t be an acceptable option, but the proponent should at least investigate the potential of redirecting flow from these tributaries (which is essentially stormwater runoff from the airport property as the tributaries start on the HIA property) so that contaminated waters do not move off-site.” (5)

The MOE reviewer felt that the area where the crops were later planted/harvested was so contaminated that it needed some remedial action attention. The reviewer felt that the potential for this area to “contribute PFOS from sediment to surface waters” was high enough that remedial action for this very spot should not be delayed. Nowhere did the reviewer propose that dragging farm equipment across the contaminated zone (multiple times), planting a crop, and harvesting a crop were remedial actions. To the contrary, these actions would exacerbate the problems highlighted by both MOE reviews (3,5).

#### IT WOULD BE VERY EASY TO DO BETTER

You don’t have to look far to see how this could have been done better – all you have to do is turn around and look across the road.

Please see photo “121016good”. This photo is taken from the same location as the other two. To take it all I had to do was turn around and look across the road downstream along Ditch 1 (outside the airport fence). Please note the nice buffer around the stream bed.

Contrast this with what occurred where the soybean crop was planted inside the airport fence (photo “121016harvested”, looking upstream along Ditch 1). Notice that farm equipment was drug across toxic contaminated Ditch 1, and soybeans were planted (then harvested) in the wet channel.

So, the commonsense practice of leaving a small buffer around the toxic contaminated Ditch 1 is being followed downstream of the airport (where it is less contaminated), while in the airport (where it is more contaminated) soybeans were planted and harvested out of the Ditch itself. If the airport (and the City and the MOE) could only use the same care and caution around toxic contaminated Ditch 1 on the airport grounds as is used across the road from the airport, then I

wouldn't be bothering you with this information.

#### References

- 1) "Highly elevated levels of perfluorooctane sulfonate and other perfluorinated acids found in biota and surface water downstream of an international airport, Hamilton, Ontario, Canada". DeSolla, DeSilva, and Letcher. **Environment International** 39:19-26, 2012.
- 2) "Guide to Eating Ontario Sport Fish, 2011-2012". Ontario Ministry of the Environment. 2011.
- 3) "PFOS in the Welland River and Lake Niapenco". Craig Fowler, Ontario Ministry of the Environment. June 3, 2011 (first edition) and March 8, 2012 (update).
- 4) Certificate of Analysis. PFOS in sediment. JOB #: B148335. Sample collected 9:18AM, April 9<sup>th</sup>, 2011. Report date April 20, 2011. Maxxam Analytics.
- 5) MEMORANDUM (internal, MOE to MOE) RE: HIA PFOS Limited Subsurface Investigation. Review for surface water issues with regard to the proposed remedial options for PFOS at the Hamilton International Airport, Hamilton. Ontario Ministry of the Environment. August 5, 2011. (Note: in the Table "ng/L" should be "micrograms/L".)
- 6) MEMORANDUM (internal, MOE to MOE) Re: Sediment Sampling in the Welland River and Tributaries upstream of Binbrook Reservoir in the vicinity of the John C. Munro Hamilton International Airport. May 2, 2011.
- 7) FINAL REPORT (internal to MOE) Untitled data printouts re: sediment and water samples in and around the Hamilton International Airport. May 19, 2011.

**Will the Ontario Ministry of the Environment please actually do something to ensure that another food crop is not grown in the toxic PFOS contaminated Ditch 1, Hamilton International Airport?**



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Log:ENV1283MC-2012-3015

October 25, 2012

Mr. Joe Minor

Dear Mr. Minor:

Thank you for your e-mail dated October 19, 2012 to the Honourable Jim Bradley, Minister of the Environment, regarding your concerns about harvested soybean crops in the area of the Hamilton Airport. The Minister has asked that I respond to you on his behalf.

The ministry's top priority is making sure people's health and the natural environment is protected. The ministry has reviewed this issue and found that there are few scientific studies available that investigate the effects of perfluorinated compounds, including perfluorooctane sulfonate (PFOS), on terrestrial plants. We are aware of a recent study done by the United States Environmental Protection Agency that found PFOS had only a "slight effect, not obviously detrimental" to seven common agricultural crops. Given this information, I can assure you that the ministry will ensure that potential impacts to neighboring farmland are addressed in the risk assessment conducted by City of Hamilton and Tradeport.

For your information, last week the ministry received the draft consultant's report on remedial options for PFOS at the Hamilton airport. We are now reviewing the report to ensure it meets the ministry's standards for completeness and that the proposed clean up options are appropriate for addressing the PFOS contamination on the airport property. The ministry will ensure that your comments are also considered in the review. I understand that following the ministry's review, the report will be presented to Hamilton City Council for approval.

Thank you for bringing your concerns to our attention.

Yours truly,

A handwritten signature in black ink, appearing to read "Bill Bardswick".

Bill Bardswick  
Regional Director  
West Central Region

c: Geoffrey Knapper, District Manager, Hamilton District Office  
Carl Slater, Technical Support Manager, West Central Region