APPENDIX B

Key Stakeholder Consultation Summary

November 2013

PROPOSED BILLY BISHOP AIRPORT EXPANSION HEALTH IMPACT ASSESSMENT

Key Stakeholder Consultation Summary

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REPORT

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Distribution:

1 electronic copy - City of Toronto
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1.0 INTRODUCTION

On October 9, 2013 a focused workshop with key stakeholders was held at Metro Hall to get feedback on the Health Impact Assessment (HIA). Specifically, the goals of the workshop were to:

- Inform key stakeholders about the purpose and methodology for the HIA;
- Gain an understanding of health concerns arising from the Proposal, including concerns related to the environment, socio-economic factors and community wellbeing; and
- Collect feedback on the relative importance of issues.

This section provides an overview of the workshop and the feedback received.

This focused workshop was planned by Toronto Public Health to gather community and public health experts to explore and discuss in detail their health concerns related to the proposed airport expansion. The number of participations was limited in an effort to balance representation from a range of community and public health organizations while creating an opportunity for focused and detailed discussions to explore issues that the communities and public health experts are concerned about. The invitees were selected based on several sources including suggestions from public health staff who work in the communities near the airport, input from local councillors, identifying public health and noise experts at area universities, identifying environmental health organizations in Toronto and reviewing the stakeholder list that was developed to support the City's public consultation activities.

A total of 40 organizations and representatives were invited to participate in the workshop. Twenty-eight people attended the workshop, representing 20 organizations. Representatives from Toronto Public Health, the City and Golder Associates Ltd. (Golder) were also present to provide information, collect stakeholder feedback and answer questions.

2.0 WORKSHOP FORMAT

The workshop was held in a round table format with participants organized into five tables based on their area of interest (e.g., medical professionals, non-governmental organizations, community organizations). The workshop began with opening remarks from Toronto Public Health's Director, Monica Campbell, followed by a presentation by Golder to inform stakeholders about the background, purpose and scope of the HIA. A copy of this presentation is provided in Appendix A.1. Following the presentation, participants were invited to ask questions about the scope of the HIA during a brief question and answer period. The focus of the workshop was to engage participants in small groups through a series of breakout sessions designed to allow discussion and encourage participation by all stakeholders. Feedback was requested on specific topics to:

- Gain an understanding of health concerns arising from the proposed BBTCA expansion, including concerns related to the environment, socio-economic factors and community wellbeing; and
- Collect feedback on the relative importance of issues.

Although a third activity was planned to collect feedback on potential mitigation measures, workshop participants elected to focus discussions on the scope of the HIA, and the potential health impacts. The interactive display boards used to solicit feedback during the workshop are provided in Appendix A.2.

3.0 WORKSHOP RESULTS AND METHODS

3.1 Issues Identification

A record of all written comments provided to Toronto Public Health, including email submissions, and workshop comment forms is provided in Appendix B. All comments relating to the HIA received by Toronto Public Health and Golder were reviewed and issues relating to the potential health impacts of the proposal were documented by frequency and content. Comments were categorized by issue category, including potential health effects associated with environmental, economic, social and cultural factors, as well as vulnerable populations and places. Within each issue category, comments were organized by issue subject (e.g., air quality). The issues list is provided below in Table 1. This list was revised based on the nature of comments received by stakeholders. In response to stakeholder input, the list was revised to include additional topics (e.g., water quality, wildlife and odour). Participant comments were reviewed and the number of times an issue was raised was counted. Although the number of times an issue was raised (reflected in the figures below) does speak to its relative importance, it does not capture the detail and content of the comments received. Comments that addressed more than one issue were counted multiple times. Following categorization, discipline-specific comments were distributed to the human health, noise and air specialists carrying out the various aspects of the HIA for review and consideration when preparing the study. Where possible, stakeholder comments were addressed. For example, the scope of the HIA was expanded to include discussion of potential health effects related to water quality and fuel transport. The following sections provide a summary of the potential health impacts and other comments identified by stakeholders as part of the workshop. Specific stakeholder feedback on each issue topic is discussed in greater detail throughout the HIA report.

Table 1: Issue List

Issue Category	Issue Topic[1]
Environmental	Air quality
	Noise
	Traffic
	Climate change
	Wildlife
	Odour
	Light pollution
	Fuel transport
	Feeling safe in the community
	Water quality

[1] Each topic, with the exception of wildlife, odour, and light pollution, is discussed in a stand-alone section in the HIA Report. Other topics are discussed within relevant sections throughout the report.

Issue Category	Issue Topic[1]
Economic	Income
	Employment
	Tourism
	Healthcare costs
	Property values
	Infrastructure
Social and Cultural	Feeling safe in the community
	Recreation
	Cultural activities
	Community services
	Community character
	Community plan (waterfront revitalization)

3.2 Question and Answer Period on HIA Scope

During and following the presentation, participants asked questions and identified concerns about the overall HIA scope. The questions are summarized below and a record of the questions recorded on a flip chart during the meeting can be found in Appendix B.1.

Participants identified that water quality should be included in the HIA scope. As identified above, the scope of the HIA was revised to include water quality following the workshop. Participants asked questions about the operational scenarios, specifically expressing concern that the future scenarios were considering 202 commercial movements per day. Participants identified that they thought that under the current agreement movements could legally increase to up to 400 movements per day. They also questioned the units of measurement for noise modelling, whether the noise model would consider activities outside airport operating hours, the location of monitoring sites, and the amount of noise monitoring (only four sites). It was identified that the community should have been consulted prior to selecting monitoring sites and that an ambient noise study was needed. Participants recommended the inclusion of easily understood health indices (e.g., premature deaths, asthma days) in the HIA report. Questions were also asked about the review process for the Medical Officer of Health (MOH) and City Manager's reports, and whether the Toronto Public Health has conducted any additional reports, specifically noise reports. One respondent also commented on the utility of using this study as a prototype for future studies.

3.3 Summary of Open Space Results – Issue Scoping

Following the presentation, participants were invited to participate in an open space exercise designed to allow participants to brainstorm and discuss potential health impacts that may result from current and proposed BBTCA operations. Participants were asked to identify potential health impacts within the categories of 'social and cultural factors', 'economic factors' and 'environmental factors'. Participants wrote down what they thought would be potential health impacts from each of the three operational scenarios on post-it notes and posted them

to the interactive display boards. The result was a long list of potential health impacts produced by the workshop participants. A record of the comments posted during this exercise is provided in Appendix B.2.

The issues raised and the number of times each issue was raised is presented on Figure 1.

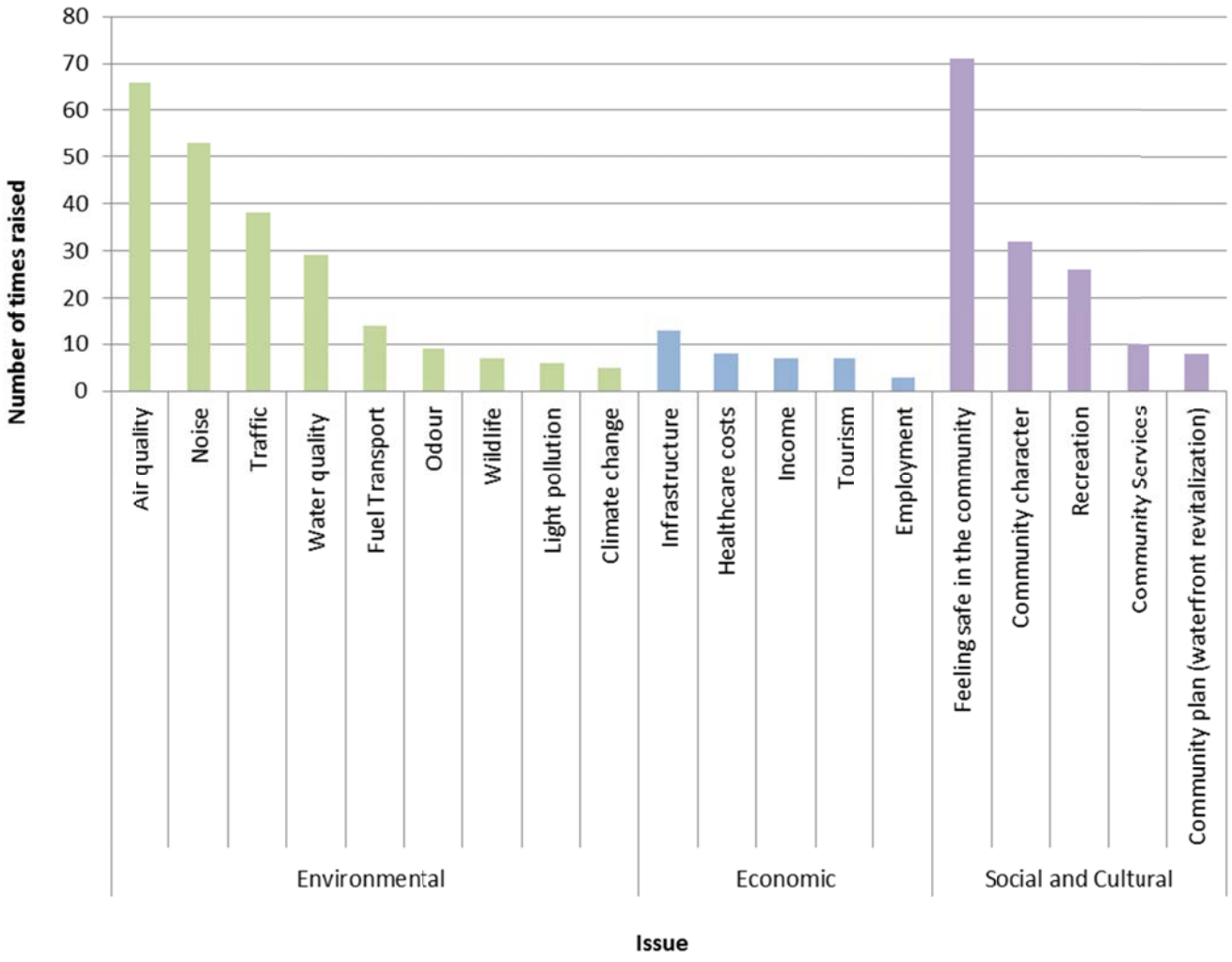

Figure 1: Open Space Feedback Received on Potential Health Impacts

A total of 538 comments were posted, including comments related to potential health impacts as well as the scope of the HIA. This section provides a high level summary of the potential health impacts identified.

Strong concerns were raised about both the current and future environmental conditions associated with operations at the BBTCA. The most frequent environmental issues raised were related to potential health impacts from air quality, noise, traffic and water quality. Concerns regarding air quality and noise were relatively consistent across all three scenarios; however, greater concern was raised regarding water quality for future operating scenarios than for the current operating conditions. For example, concerns about water quality were

linked to increased runoff of de-icing fluids in scenarios two and three, fuel spills in scenario three and the expansion of the runway in scenario three. In general, comments pertaining to environmental concerns were linked with perceptions of community health and safety as well as perceived risks to vulnerable places including parks, schools and daycares, and vulnerable populations, especially children.

Strong concerns were raised about both the current and future social and cultural conditions associated with operations at the BBTCA. The most frequent social and cultural issues raised were associated with feeling safe in the community, and potential health impacts associated with community character and recreation. Potential health impacts identified related to feeling safe in the community included concerns regarding illnesses associated with emissions (respiratory, cancer) and noise, concerns regarding pedestrian safety, especially for children, seniors and people with disabilities, the threats posed by high traffic volume and inadequate crosswalks, as well as the potential for catastrophic events (fuel spills, plane strikes). Concerns related to community character included the potential ghettoization of the neighborhood and potential shift in community demographics, and a lack of green space for community services. Concerns associated with recreational opportunities, including the use of Toronto Island, various parks, and both the waterfront and harbour were expressed for all scenarios but were particularly prevalent for future operating scenarios. One positive aspect of the BBTCA development was noted; emergency medical medevac services and the potential of this service to save lives. Concerns regarding social cultural issues, especially ghettoization and recreation were also linked to economic concerns.

Concerns were also raised about both the current and future economic conditions associated with operations at the BBTCA. The most frequent economic issues raised were property values, costs associated with infrastructure requirements (e.g., new windows, patio doors, HVAC systems etc.), costs of increases in health care associated with increased hospital visits, and loss of income due to increased sick days and missed work. The number of economic concerns raised was evenly distributed by scenario, although the prevalence of issues varied slightly amongst scenarios (e.g., the greatest number of concerns regarding property values was raised in scenario two).

Concerns were also raised about the approach of the HIA. Many respondents suggested including water quality in the HIA because of potential impacts from de-icing runoff from the airport into Lake Ontario, as well as how runway extension may affect flow regimes in the inner harbour. Respondents also expressed concerns about the units used for noise measurements and suggested using dBC noise measurements as opposed to dBA noise measurements. With respect to the scope of the HIA, respondents repeatedly emphasized the importance of vulnerable places such as the schools and daycares in the immediate vicinity, parks, including Little Norway Park and the Music Garden as well as Toronto Island, and in particular, the Island Natural Science School. Respondents repeatedly expressed concern for vulnerable populations including children, seniors and people with disabilities. Respondents also commented on the need for a “no airport scenario” to be considered as well as a need to simulate fuel transport scenarios and discuss emergency preparedness responses.

In addition to using the interactive display boards, one table created a separate list of ‘environmental stress’ where they listed concerns related to cumulative effects, sleep deprivation due to noise and light, how the expansion would be counter to five decades of thorough and civic investment on the waterfront and safety associated with those living very close to the BBTCA.

3.4 Summary of Breakout Session 1 – Prioritizing Issues

The second exercise was a breakout session designed to allow participants to prioritize the potential health impacts they identified during the open space exercise. A summary of the potential health impacts identified during the previous activity was projected on the screen. Worksheets were circulated to each table. The purpose of these worksheets was to have the participants rank the issues identified during the open space exercise as 'most important', 'important' and 'less important' for each of the three operational scenarios. The completed worksheets for this exercise are provided in Appendix B.3. This section provides a summary of the comments received during this exercise.

The feedback received from these worksheets indicated that the current conditions (scenario 1) are already unacceptable (air quality, noise, community character/well-being and children being the main topics of concern) and that scenario 2 and 3 would increase potential health impacts. In addition most (5 of 7) ranked all of the issues as 'most important'. The issues raised and the number of times they were raised through these worksheets is presented below on Figure 2.

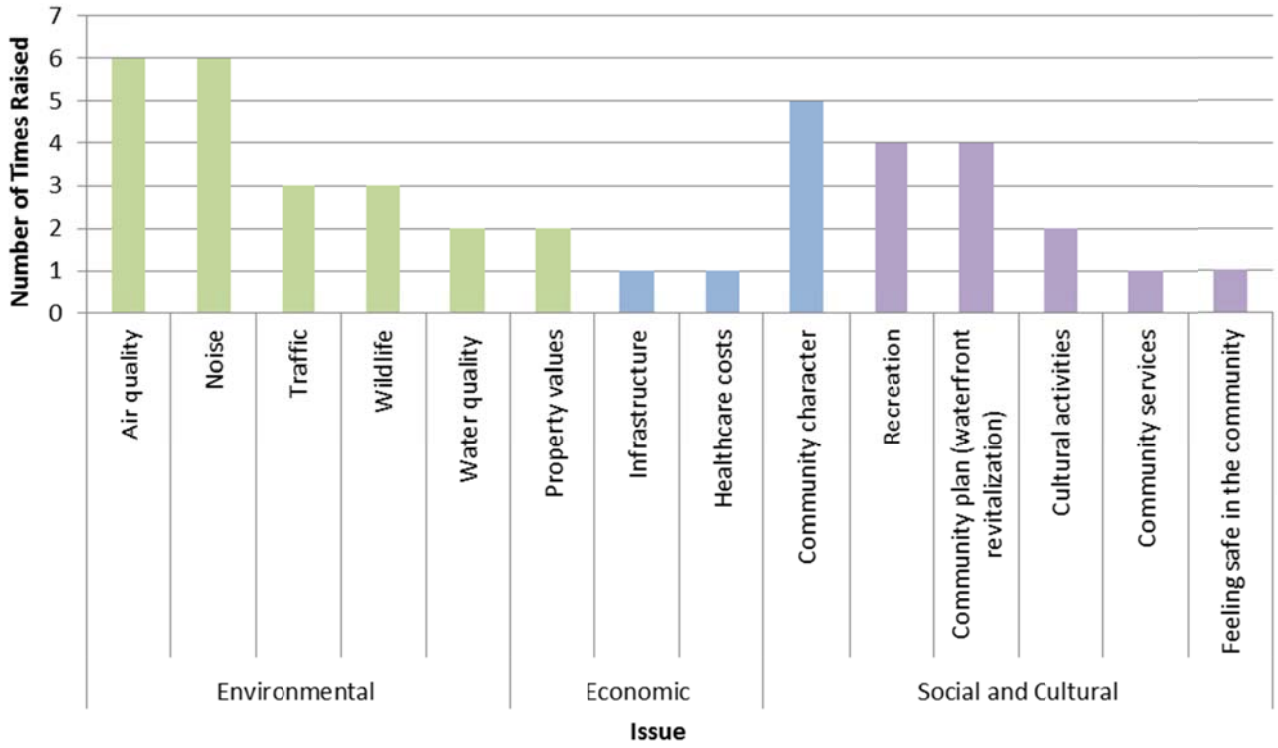

Figure 2: Breakout Activity 1 Feedback Received on Potential Health Impacts

Only one worksheet identified 'not important' issues (changed from 'less important'). Under 'not important', the group listed the following statements: "the interests of one private entity; and basing the noise models on unsubstantiated data since the jets in question have not yet been certified by Transport Canada".

Environmental concerns identified as 'most important' for all three scenarios included individual and cumulative impacts from noise, air quality and water quality. These issues were identified to result from all three scenarios,

however were expected to worsen with expanded operations (scenarios 2 and 3). Traffic was also identified as an issue related to both air quality and public safety. Concerns were also raised over the aquatic ecosystem (water flows, habitat and E. coli levels) and an increase of bird strikes under scenarios 2 and 3.

Economic concerns included rising healthcare costs associated with poor health due to the existing conditions that were expected to worsen with expanded operations (scenarios 2 and 3). Concerns were raised on the impact expanded operations would have on property values. Concerns were also raised that the existing infrastructure supporting current operations of the BBTCA is already overwhelmed and expanded operations would make a bad situation worse.

Social and cultural concerns identified included a loss of recreational space (under current operations that would worsen with expanded operations) and that current BBTCA operations do not fit with the Waterfront Revitalization initiative, or the character of the community. It was noted that the community has become divided over the proposed expansion, as both BBTCA employees (supporters of the proposed expansion) and opponents live in the neighbourhoods nearby.

Participants identified vulnerable populations in the area including children, seniors, low income individuals, people with disabilities and pregnant mothers. The comments received also identified areas of concern that should be included in the HIA, these included park lands (near the airport), the Harbourfront area and the Toronto Islands.

3.5 Summary of Comment Forms and Emails

Workshop participants were encouraged to complete comment forms to provide feedback on any other issues that they would like to be considered as part of the HIA. Participants were also provided the option to submit issues or concerns via email for the week following the workshop. Eight comment forms and 76 emails were received. In general, comments addressed more than one of the categories and raised more than one issue. The issues raised and the number of times each issue was raised is presented on Figure 3. The comment forms and emails received are provided verbatim in Appendix B.4. Stakeholder comments received via email by Toronto Public Health and/or Golder were redacted to protect personal identifying information.

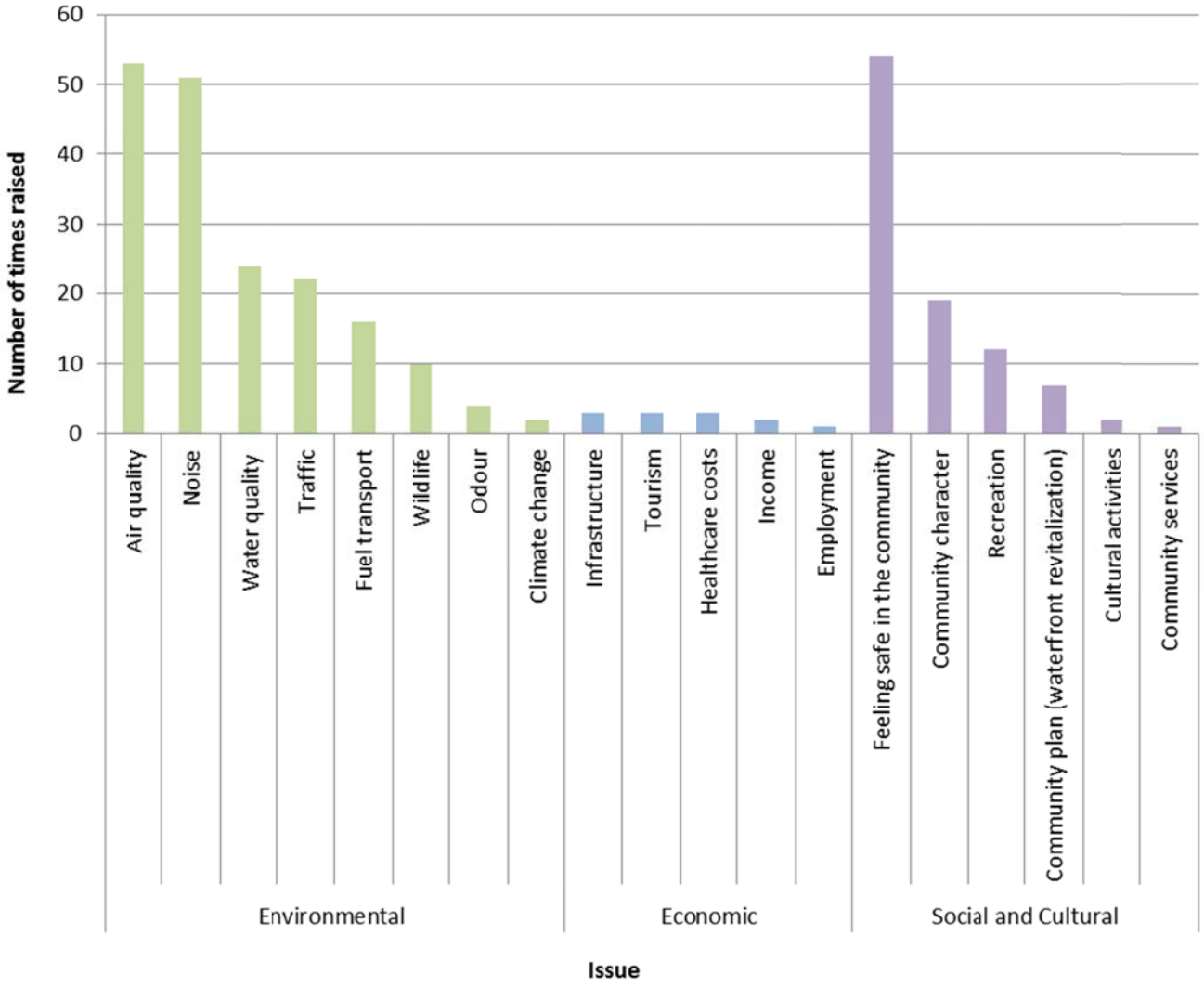

Figure 3: Comment Form/Email Feedback Received on Potential Health Impacts

Environmental concerns raised through the comment forms and emails focused on current environmental conditions associated with the current level of operations at BBTCA, specifically noise, air quality and traffic issues. Stakeholders commented that these issues would just get worse with expanded operations (scenarios 2 and 3). There was also a focus on water quality, both under current operations and concerns raised over expanded operations. The concerns around water quality were related to runoff of de-icing from planes and potential changes to flow regimes (if the runway were to be extended). Also the effect on wildlife was raised as a concern, along with the broad issue of climate change and how current and expanded operations would affect these issues.

Social and cultural concerns were raised about the effect of BBTCA (both under current operations and expanded operations) on nearby recreational land uses. BBTCA was also seen as not being in line with the character of the surrounding area, specifically because of the personal opinion of one of the participants that the

Tripartite Agreement between the governments of Canada, Toronto and the Harbour Commission (now the Toronto Port Authority) is already being breached by current operations and the BBTCA. Furthermore, the BBTCA and especially its expanded operations were viewed by some stakeholders as contradictory to the goals of the Waterfront Revitalization initiative.

Economic concerns focused on increased healthcare costs associated with poor air quality and noise issues near the BBTCA. Also tourism was seen to be negatively impacted by current and expanded operations on the waterfront and the Toronto Islands.

Concerns were raised that water quality was not being included in the HIA but should be. Comments received also raised issues with how the air quality assessment was being completed. Respondents indicated that air quality sampling and monitoring should be conducted as opposed to using air quality models because only monitoring can give an accurate description of baseline conditions. For noise, monitoring dBC was suggested over dBA as dBC was seen as giving a more accurate description of the noise experienced by residents. Additionally, concerns were raised that the HIA did not include the cumulative effects of air quality, noise and water quality.

Vulnerable populations and places were also identified. Potential health impacts were linked to vulnerable populations in the area, namely children and seniors. These concerns were also associated with the Harbourfront area generally (including the Island, both for residents and visitors), the public spaces (parks, specifically Little Norway Park and beaches, specifically Hanlan's Point Beach) and the waterfront school/pre-school/child care facility that are all near the Airport.

Concerns were also raised regarding the schedule for the HIA, namely that three weeks is too short of a time to complete the HIA properly. Respondents expressed concern with the public consultation that was being undertaken in support of the HIA. Respondents requested a different format to the workshop approach, and felt that the workshop should include more stakeholders and stakeholder groups.

4.0 SUMMARY

Overall key stakeholder feedback indicated that the current conditions in the area around the airport are already unacceptable and would be expected to worsen with the expansion of airport operations. Health impacts were linked to vulnerable populations in the area, namely children, low income individuals, people with disabilities, pregnant mothers and seniors. Concerns were associated with the Harbourfront area generally including:

- Harbourfront residents, including lower income residences;
- the Toronto Island, both for residents and visitors;
- public spaces (e.g., Little Norway Park, the Music Garden and Hanlan's Point Beach); and
- the waterfront school/pre-school/child care facility.

In addition to potential health impacts identified, concerns were also raised regarding the schedule for the HIA and the level of public consultation undertaken.

Figure 4 provides a summary of the issues relating to potential health impacts identified by key stakeholders. Concerns about current and future environmental conditions raised most frequently and identified as most important included:

- illnesses associated with air emissions (respiratory, cancer) and noise (sleep deprivation, education);
- pedestrian safety from high traffic volume, especially for children, seniors and people with disabilities;
- risks associated with fuel transport; and
- water quality impacts from increased runoff of de-icing fluids, fuel spills and runway expansion.

The most frequent social and cultural issues identified included:

- feeling unsafe due to potential for catastrophic events (fuel spills, plane strikes), air quality and pedestrian safety;
- potential ghettoization of the neighborhood and shift in community demographics; and
- impacts on recreational opportunities, including the use of Toronto Island, various parks, and both the waterfront and harbour.

The most frequent economic issues raised included:

- infrastructure supporting current operations of the BBTCA is already overwhelmed and expected to worsen with the expansion of operations;
- costs associated with infrastructure requirements to deal with potential air and noise impacts from the airport operations (e.g., new windows, patio doors, HVAC systems etc.);
- health care costs associated with increased hospital visits, and loss of income due to increased sick days and missed work were associated with poor health due to the existing conditions, and predicted to worsen with the Proposal;
- negative impacts on waterfront and the Toronto Islands tourism (e.g., the waterfront and Toronto Islands) from current and expanded operations; and
- negative impacts on property values from expanded operations.

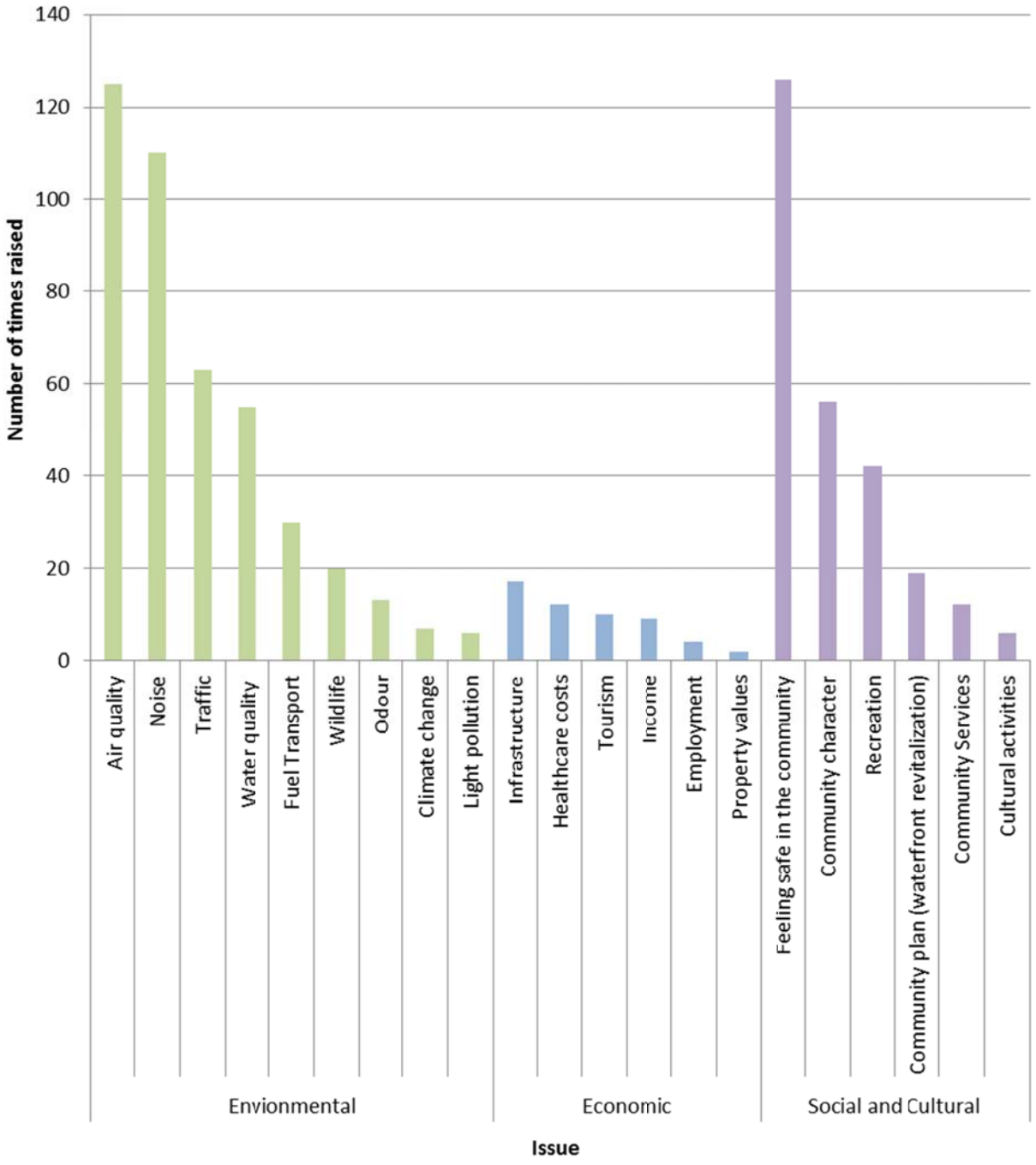

Figure 4: Summary of Key Stakeholder Feedback on Potential Health Impacts

Report Signature Page

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APPENDIX A.1

Health Impact Assessment Workshop Presentation

Billy Bishop Toronto City Airport

Health Impact Assessment Workshop

Toronto Public Health

Golder Associates

Workshop Goals

- Inform key stakeholders about the purpose and methodology for the HIA
- Gain an understanding of health concerns arising from the proposed BBTCA expansion, including concerns related to environmental, economic, and social and cultural factors
- Collect feedback on the relative importance of issues
- Explore potential mitigation measures to reduce effects

Agenda

- **Introduction** (6:00 pm – 6:20 pm) – 20 min
- **Health Impact Assessment Overview** (6:20 – 7:10) – 50 min
- **Open Space Activity: Scope Potential Health Impacts** (7:10 pm – 7:40 pm) – 30 min
- **Break** (7:40 – 7:50 pm) – 10 min
- **Break-out Session: Prioritize Potential Health Impacts** (7:50 pm – 8:20 pm) – 30 min
- **Break-out Session: Discuss potential mitigation measures** (8:20 – 8:50) – 30 min
- **Closing remarks** (8:50 pm – 9:00pm) – 10 min

How feedback will be incorporated into the HIA

Collecting feedback from stakeholders is important step in the HIA.

Input you provide tonight will be used to:

- Refine the scope of the HIA
  - Identify vulnerable people and populations and constraints
- Describe existing conditions
- Identify and assess changes through health determinants
- Provide recommendations to Toronto Public Health

Workshop Conduct

We will be asking for you to provide feedback through a series of group discussions on focused topics. To allow everyone the opportunity to participate equally, encourage productive discussions, and collect meaningful input participants are asked to keep the following points in mind:

- Listen, be honest and respectful
- Be open to hearing other people's perspectives
- Do not interrupt others while they are speaking
- Cell phones on silent
- Be respectful of schedule and time

- Success depends on participation – share ideas, ask questions, draw others out
- Questions, outcomes and actions will be documented

Introduction to Health Impact Assessment

Health Impact Assessment (HIA)

- What is an HIA?
  - A process used to assess or predict the health effects of a project or policy; inform or influence the decision-making process; and mitigate any health consequences of a decision.
- What is meant by “health”?
  - “A state of complete physical, mental and social well-being and not merely the absence of disease or infirmity” (from World Health Organization)
- How is health evaluated in an HIA?
  - By evaluating factors of health that encompass social, economic, physical, and cultural well-being

Who Is Involved In The HIA

- Toronto Public Health is overseeing the HIA so the Medical Officer of Health can advise the City regarding the Porter Airlines Inc. proposal
- Porter has proposed to permit jet airplanes at the BBTCA, including the following amendments to the 1983 Tripartite Agreement:
  - The lift of the current prohibition of jet aircraft operations at the BBTCA
  - An authorization to lengthen the runway at each end of the airfield
- Toronto Public Health scoped the HIA in collaboration with the Waterfront Secretariate
- The City Manager's Office retained Golder based on input from TPH

Why Do An HIA for BBTCA?

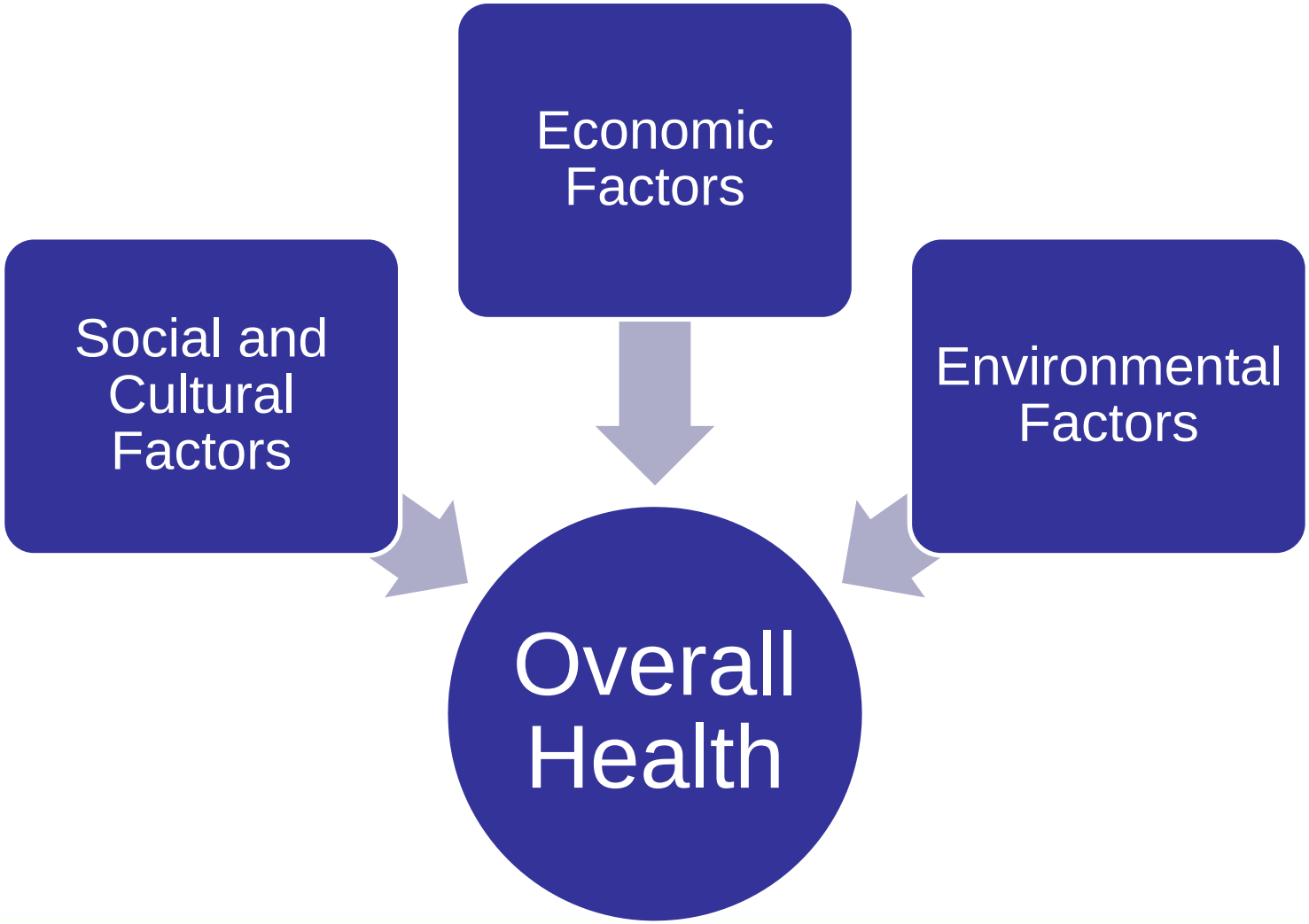
- While evidence shows that airport operations may be associated with the health impacts of people nearby, not all airports are alike
- Available research examines airports where operations and settings are somewhat distinct from those at Billy Bishop airport
- The extent to which health impacts are associated with a specific airport depends on many factors including the type and frequency of operations, which affect the levels of noise and air pollution at various locations around the airport
- Impacts also depend on the number, proximity, and vulnerability of people nearby
- A HIA for Billy Bishop airport will help ensure that discussions of health impacts reflect local circumstances

What Is The End Goal Of The HIA?

The purpose of the study is to provide Toronto's Medical Officer of Health with the evidence necessary to advise on potential positive and negative health impacts associated with the potential expansion of BBTCA service

BBTCA HIA Scope

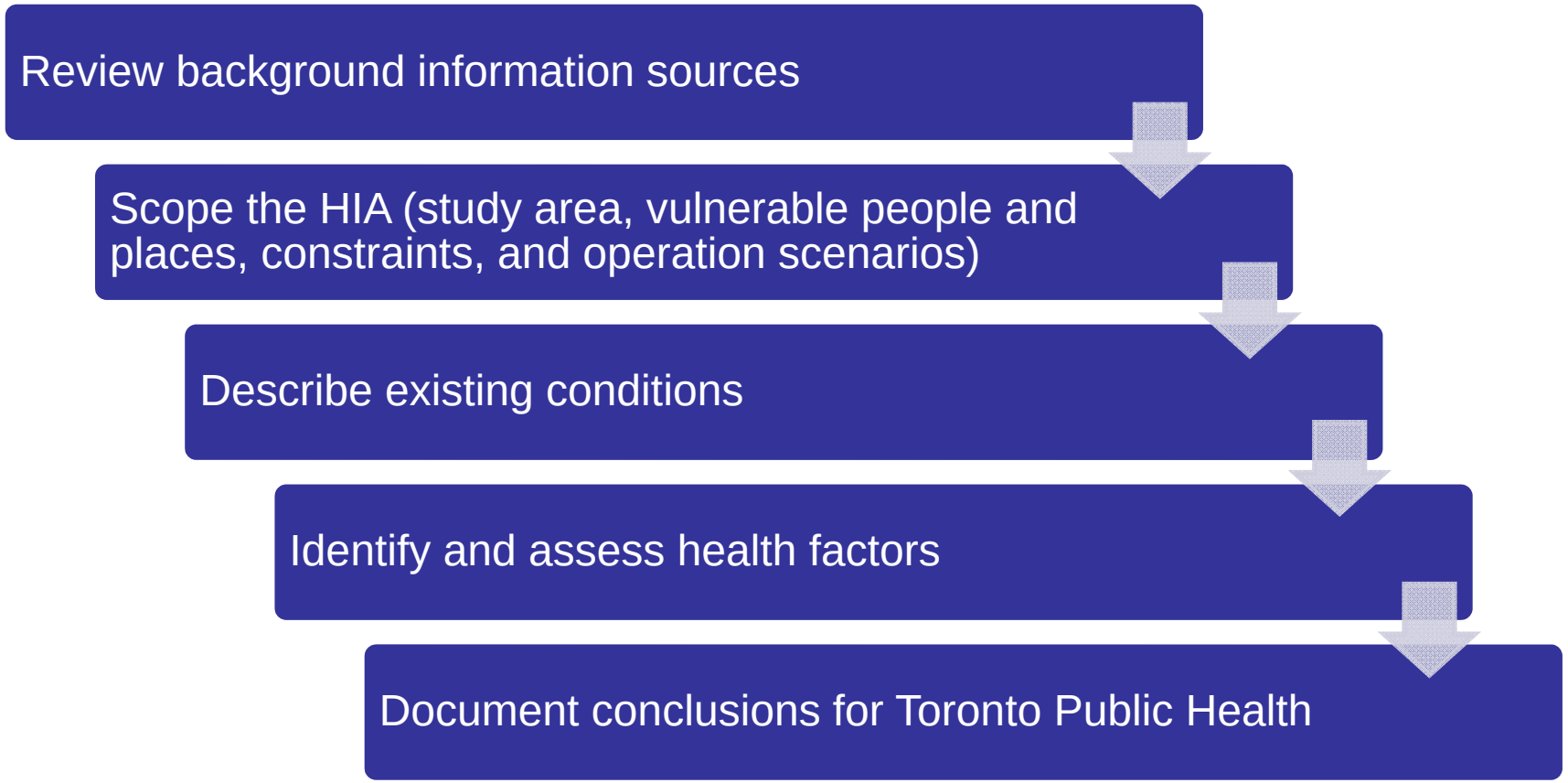
Factors that Affect Health



Factors that Affect Health

- Environmental Factors
  - Air quality
  - Noise
  - Traffic
- Economic Factors
  - Income
  - Employment
  - Connectivity and convenience
- Social and Cultural Factors
  - access to employment and education opportunities, health care and community services, and public transport
  - Perception of health and safety
  - Community support for the Project

Health Impact Assessment Process



Review Background Information

- HIA Literature review
  - Previous airport studies
  - Previous Toronto Public Health reports
- Collect/review background information from:
  - City of Toronto (www.cityoftoronto.ca/bbtca_review)
  - City of Toronto public consultations
  - Aviation consultants – Airbiz
  - Aircraft manufacturer - Bombardier
  - Aircraft engine manufacturer - Pratt & Whitney
  - Responsible for management of BBTCA - Toronto Port Authority
  - Federal government - Transport Canada
  - Porter Airlines

HIA Vulnerable People

- The HIA will consider people that may be more vulnerable to health impacts, including:
  - Children, toddlers and infants
  - Elderly
  - Individuals already affected by chronic respiratory or cardiac disease
  - Lower socioeconomic status

- The HIA will evaluate representative people and places that are expected to have the highest exposure / effects

- The HIA will rely on the results of air quality and noise modelling, as well as economic and traffic studies

Operation Scenarios

- ***Scenario 1: Current Conditions***
  - based on an airline passenger base by 2.3 million persons per annum (ppa)
- ***Scenario 2 – Expansion to include Bombardier Q400 Only***
  - Bombardier Q400 aircraft (eg., the type of propeller airplanes currently used by Porter airlines) and no expansion of the runway
  - based on an expanded passenger base of 3.8 million ppa and 202 commercial movements per day
- ***Scenario 3 – Expansion to include Bombardier Q400 and CS100 Equivalent Aircraft***
  - Bombardier Q400 and CS100 equivalent aircraft (propeller airplanes and new jets) and expanding the runway at each end
  - based on an expanded passenger base of 4.3 million ppa and 202 commercial movements per day

Comparison of Q400 and CS100

Bombardier Dash8-Q400		Bombardier CS100
		
	Physical	
32.8 m	Length	35 m
28.4 m	Width	35.1 m
8.4 m	Height	11.5 m
74	Pax (Typical)	110
6,616 L	Fuel Capacity	tbd
	Performance	
29,574 kg	Maximum Take-Off Weight (MTOW)	58,513 kg
3,410 kW (Power)	Engine Thrust	103.5 kN
2,063 km	Range (@MTOW)	2,778 km
1,468 m	Runway Length (ISA, MTOW, SL)	1,463 m
	Noise / Environment	
84.0	Takeoff (EPNdB)	Tbd
93.1	Approach (EPNdB)	Tbd
78.6	Flyover (EPNdB)	Tbd
255.7	Cumulative (EPNdB)	is less than 259.5
21.2 g/kN	Nox Emissions	56-58% margin
5.6 g/kN	UHC Emissions	85% margin
86 g/kN	CO Emissions	80% margin

Identify and Assess Changes

- The following information sources will be used to characterize the magnitude and extent of health impacts and assess cumulative health impacts

Community Profiles	Literature Studies	Stakeholder workshop
Public consultation	Data from predictive modeling (air and noise)	Traffic assessment

Air Quality Considerations

Air Quality Drivers

- Air quality in Toronto is influenced by meteorology and activities
  - Activities generate air emissions which are transported and dispersed into the Toronto Airshed
- Local and Regional activities outside Toronto also contribute to the City's air quality
- The HIA will look at the existing background air quality in the City of Toronto as well as BBTCA activities
  - i.e. cumulative effects will be simulated
- Simulations for each scenario will take into account
  - Flight schedule
  - Type of planes
  - Number of planes
  - Increase in passengers
  - Traffic to and from airport

BBTCA Activities To Be Simulated

- Aircraft movements
  - Taxiing
  - Take-off
  - Landing
  - Climb out
- Ground Support
  - Luggage carriers
- Deicing
- Power generation
- Fuel Storage
- Transportation to/from airport
  - Taxi queuing
  - Parking
  - Ferries

List of Priority Air Contaminants

1. Acetaldehyde
2. Acrolein
3. Benzene
4. 1,3-Butadiene
5. Cadmium
6. Carbon tetrachloride
7. Chloroform
8. Chloromethane
9. Chromium
10. 1,4-Dichlorobenzene
11. 1,2-Dichloroethane
12. Dichloromethane
13. Ethylene dibromide
14. Formaldehyde
15. Lead
16. Manganese
17. Mercury
18. Nickel compounds
19. Nitrogen Oxides
20. PAHs (as B[a]Ps)
21. $PM_{2.5}$
22. Tetrachloroethylene
23. Toluene
24. Trichloroethylene
25. Vinyl Chloride
26. Carbon Monoxide (CO)
27. PM_{10}
28. Sulfur Dioxide
29. VOC (anthropogenic/Biogenic)
30. Ozone

Noise Considerations

Background On Noise At BBTCA

- Tripartite Agreement
  - Agreement dated June 30, 1983, Amended last on June 2003
  - Noise Related Items
    - Official 25 NEF Contour
    - 1990 Noise Exposure Forecast (NEF) Contour Map
    - International Civil Aviation Organization's (ICAO) Noise Standards Annex 16 – Three noise measurements; 1)Take off 2) Sideline at Takeoff 3) Approach

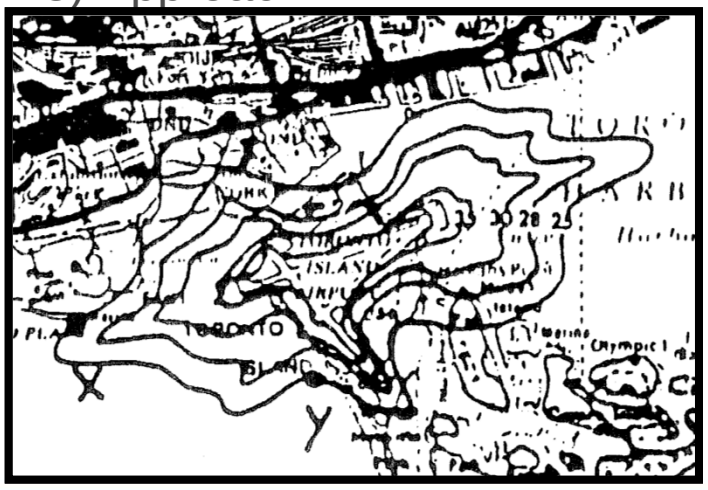


Image Snapshot
1990 Noise Exposure Forecast (NEF) Contour Map – Schedule F

Background On Noise At BBTCA

- Toronto Port Authority (TPA)
  - Jacobs Consultancy Canada Inc. *Draft Billy Bishop Toronto City Airport –Noise Management Study-Interim Report.* February 2010
  - Dillon Consulting Limited / RWDI AIR Inc. *Draft Report BBTCA Noise Impact Assessment RWDI #1010187.* November 2010
  - Dillon Consulting Limited. *Proposed Noise Barriers and Engine Ground Run-Up Enclosure Project Description.* March 2011
  - Dillon Consulting Limited. *Noise Barriers and Engine Ground Run-Up Enclosure Environmental Screening Report.* October 2011

BBTCA Activities To Be Assessed for Noise

- The following BBTCA activities will be assessed
  - Aircraft movements
    - Taxiing
    - Take-off
    - Landing
    - Runups
    - Reverse Thrusts
  - Transportation to/from airport
    - Ferries

Noise Indices for the HIA

- The HIA will assess noise for all three scenarios using the following indices:
  - L_{Aeq} 24 hour
  - L_{Aeq} Daytime (7 am – 11 pm) & Nighttime (11 pm – 7 am)
  - SEL (sound exposure level)
  - %HA (highly annoyed)
  - HCII (impulse noise indicator)
- Noise indices will be compared to applicable guidelines to assess health effects

Question and Answer Period (up to 15 minutes)

- Do you have any questions about the purpose of the Health Impact Assessment or the scope?

- Please raise your hand if you have a question

Your Feedback

Potential Health Impacts – Open Space (30min)

Goal: Gain an understanding of health concerns arising from the proposed BBTCA expansion, including concerns related to environmental, economic, and social and cultural factors

Question: for each operation scenario, how do you think the factors related to health might be affected by the BBTCA proposal?

- Identify what health impacts might occur through these factors
  - Include both negative and positive impacts
- Identify who might be affected and where effects might occur
  - Identify vulnerable people and places
- Identify whether health impacts may be positive, neutral or negative

Potential Health Impacts – Open Space (30min)

Format: Circulate room freely, discuss, and post your ideas about how these factors related to health might be affected by the BBTCA proposal

- Factors are posted in corners of the room:
  - Social and Cultural
  - Economic
  - Environmental
- At each station there are posters for you to post your comments
- There is also a facilitator to help record your discussions

Example response: Noise from trains may cause sleep deprivation in seniors (negative health impact)

- **Result:** List of positive and negative health impacts that may result from each BBTCA operational scenario

Prioritize Health Impacts – Break-out Session (30 min)

- **Goal:** Collect feedback on the relative importance of issues
- **Question:**
  - Impacts identified during the open space will be projected on the screen
  - For each scenario (*Current Conditions, Expansion to include Bombardier Q400,* and *Expansion to include Bombardier Q400 and CS100 Equivalent Aircraft*), prioritize the potential negative and positive impacts by grouping them into the following three categories:
    - Most Important, Important and Less Important
- **Format:**
  - Break into small discussion groups by table
  - Each table will select a recorder who will document their group's results
  - A facilitator will answer questions and track the time at each table

Potential Mitigation Measures – Break-out Session (30 min)

- **Goal:** Explore potential mitigation measures to reduce effects
- **Question:**
  - For each scenario (*Current Conditions, Expansion to include Bombardier Q400,* and *Expansion to include Bombardier Q400 and CS100 Equivalent Aircraft*), consider the negative impacts your group identified as most important, describe who might be affected, and how impacts might occur
  - Identify any mitigation measures that could be put in place to reduce or avoid these potential negative impacts.
- **Format:**
  - Break into small discussion groups by table
  - Each table will select a recorder who will document their group's results
  - A facilitator will answer questions and track the time at each table

Next Steps

- Input from today's workshop will be documented in the Health Impact Assessment Report
- The final report will be made available to the public by TPH by the end of November
- The City will be holding another consultation session in November (date to be determined)
- The findings of the Health Impact Assessment will inform a report from the Medical Officer of Health on the proposed expansion of BBCTA.
- This report and the HIA findings will be considered by the Board of Health on December 9, and by City Council at its meeting of December 16-17.

THANK YOU

APPENDIX A.2

Interactive Display Boards

Current List of Social and Cultural Factors

- Access to employment and education opportunities, health care, community services, public transport
- Perception of health and safety
- Community support for the Project

For each of the three scenarios, think about how these factors might be affected and write your comments on a post-it:

- Identify what health impacts might occur through these factors
    - Include both negative and positive impacts
- Identify who might be affected and where impacts might occur
    - Identify vulnerable people and places
- Identify whether you think the health impact may be positive, neutral or negative

Social and Cultural Factors

Scenario 1: Current Conditions

October 9, 2013
Health Impact Assessment Workshop
Billy Bishop Toronto City Airport

TORONTO Public Health

Golder Associates

Social and Cultural Factors

Scenario 2: Expansion to include Bombardier Q400 (propeller airplanes) only, with more passengers

October 9, 2013
Health Impact Assessment Workshop
Billy Bishop Toronto City Airport

Social and Cultural Factors

Scenario 3: Expansion to include Bombardier Q400 (propeller airplanes) and CS100 Equivalent Aircraft (new jets)

October 9, 2013
Health Impact Assessment Workshop
Billy Bishop Toronto City Airport

TORONTO Public Health

Golder Associates

Current List of Economic Factors

- Income
- Employment
- Connectivity and convenience

For each of the three scenarios, think about how these factors might be affected and write your comments on a post-it:

- Identify what health impacts might occur through these factors
    - Include both negative and positive impacts
- Identify who might be affected and where impacts might occur
    - Identify vulnerable people and places
- Identify whether you think the health impact may be positive, neutral or negative

Economic Factors

Scenario 1: Current Conditions

October 9, 2013
Health Impact Assessment Workshop
Billy Bishop Toronto City Airport

TORONTO Public Health

Golder Associates

Economic Factors

Scenario 2: Expansion to include Bombardier Q400 (propeller airplanes) only, with more passengers

October 9, 2013
Health Impact Assessment Workshop
Billy Bishop Toronto City Airport

TORONTO Public Health

Golder Associates

Economic Factors

Scenario 3: Expansion to include Bombardier Q400 (propeller airplanes) and CS100 Equivalent Aircraft (new jets)

October 9, 2013
Health Impact Assessment Workshop
Billy Bishop Toronto City Airport

TORONTO Public Health

Golder Associates

Current List of Environmental Factors

- Air Quality
- Noise
- Traffic

For each of the three scenarios, think about how these factors might be affected and write your comments on a post-it:

- Identify what health impacts might occur through these factors
    - Include both negative and positive impacts
- Identify who might be affected and where impacts might occur
    - Identify vulnerable people and places
- Identify whether you think the health impact may be positive, neutral or negative

TORONTO Public Health

Golder Associates

Environmental Factors

Scenario 1: Current Conditions

October 9, 2013
Health Impact Assessment Workshop
Billy Bishop Toronto City Airport

TORONTO Public Health

Golder Associates

Environmental Factors

Scenario 2: Expansion to include Bombardier Q400 (propeller airplanes) only, with more passengers

October 9, 2013
Health Impact Assessment Workshop
Billy Bishop Toronto City Airport

TORONTO Public Health

Golder Associates

Environmental Factors

Scenario 3: Expansion to include Bombardier Q400 (propeller airplanes) and CS100 Equivalent Aircraft (new jets)

October 9, 2013
Health Impact Assessment Workshop
Billy Bishop Toronto City Airport

TORONTO Public Health

Golder Associates

APPENDIX B.1

Question and Answer Session Feedback

Record of comments recorded on flip chart during the question and answer period on HIA scope

1 Concerned about [the] scope [of the HIA]. Water?

2 Why 7am - 11 pm for daytime indicators? A lot of activity between 6:45 and 7 am. This is when we are woken up.

3 Will the Ministry of Health's report go to the board of health or will it be part of the City Manager's report? Will it be independent?

4 Can you model easily understood indices (premature death, asthma days etc.). Can you put your results in those terms?

5 Has Toronto Public Health done any studies? Have any noise studies been done that have scientific relevance (other than consultants)?

6 Hope this is a prototype for further studies.

7 How much monitoring was done? Is it ongoing? Airport was very quiet, fake run-ups (documented).

8 How are you using dBA? Does not include base noise.

APPENDIX B.2

Open Space Feedback

November 2013
Report No. 13-1151-0215

Record of Post-its from Environmental Open Space Posters
Comments Posted by Workshop Participants on Instruction Poster

- Golder Associates Ltd: Tier III Toronto gridded PAC emissions. S. Riverdale, Leslieville Beach air shed. High PM2.5/10 + benzene! June 2011.
- Dangerous levels already identified in 2011 in Wards 30//32. Toluene, Knox, PM10, Benzene and PPAH. Before the Portland Energy Centre added more.
- Ward 32 beaches are already affected by the Q400's. It is a "noise sensitive area" but planes do not comply.
- Noise in Ward 36 - Bluffs. Porter uses Bluffs to turn around or enter land. Banks right over homes and the noise is terrible!
- April 10, 2012. City council adopted with items from the board of health to "strengthen measures to reduce the impacts of transportation emissions on air quality" in wards 30 and 32.
- Losing sleep in Ward 32 from 6:45 am to 11:05pm. Do not even get 8 hours of sleep anymore! Health impacts!
- Taxi's are not included in the noise factor.
- Noise is a red herring to other health impacts.
- Noise is not the sole factor/issue.
- Air sampling needs to be done by Toronto Public Health.
- Speech interference from noise in the classrooms. Impact on learning from noise. Impact on young children, kindergarten age during recess and outside activities from air pollution.
- DPM - on EC/TC more true measure of PM2.5. Recognized by IARE as known carcinogen.
- Current issue with grade school students with respiratory issues. Will increased traffic affect these students?
- Crossing the street for seniors and mobility challenged people. Slow walking children and seniors. Cars do not stop for pedestrians, even on a green light. Lakeshore is particularly dangerous for people to cross. The stop lights are not green long enough to get across.
- Need actual air monitoring at the airport and near sensitive receptors such as the school.
- St. Stephens Waterfront Community Centre child care is located on the southwest corner of the building. The windows of the child care face the water. When opened they face the airport. Kindergarten playground which child care also uses is elevated on the second floor of the building, air flow from the airport and vehicles are very close.
- The ferry boat idles beside the playground. The vehicles idle on the boat. The children inhale diesel and gas fumes while they play.
- Idling taxies contribute to vehicle emissions that enter the school's fresh air intakes!
- We have multi bedroom units. Some up to four bedrooms, many families live here. There are lots of children, seniors and persons with mobility issues.

- What if current, existing conditions are too challenging to tolerate? Noise, the smell of kerosene, traffic, light from the airport.
- Passengers and limo's park and idle all over the area. They are abusive to us when we ask them not to park in the bike lane or idle.
- Water quality.
- Water quality is a significant environmental factor.
- Water [has been] left off the table. Fresh water is a vital commodity.
- Please count the exposures coming from neighbourhood traffic. The Gardiner expressway, Lakeshore and Queens Quay (idling during construction on queens Quay is scheduled to be ongoing until 2015).
- Harbourfront child care infants go for walks along the waterfront, to Coronation Park, etc. The air is full of vehicle emissions - there is almost a constant stream of cars, busses, taxi's as well as the cars along the Lakeshore and Gardiner all day. Illness - children who are ill mean that parents are unable to go to work/school. Staff ill means they are unable to work. The cost of replacement staff in childcare due to ratios - Day Nurse Act - of teacher/child. Disturbed sleep will lead to stressed infants, toddlers and young preschool children. Air pollution affects breathing of children with asthma and allergies.

Record of Post-its from Environmental Open Space Posters (continued)

Comments Posted by Workshop Participants on Scenario 1 Poster

- Proper testing of air near school and in park (Little Norway Park) and near two daycares on Bathurst Quay
- Need to simulate fuel transportation to airport
- There is a great hunger amongst waterfront residents for a health consultation meeting by treaty. It should be open to all and scheduled for a very large room.
- Current health impacts are unacceptable. I have lived on Bathurst Quay for 26 years. Recently diagnosed with bronchitis.
- Scenarios should include no airport - look at health impacts of an expanded park - based on upcoming Toronto Public Health Study
- Curfew: 6:45(am) - 11 pm is disrespected by Porter. Aircraft should not be operated in curfew. They start their engines well within the curfew period.
- Emission of fossil fuels from aircraft contributes to climate change - the biggest ultimate threat to all our health
- Pollution: breathing, film on buildings, etc.
- "Headaches and sleep deprivation from noise
- Harbourfront"
- Assaulted by airport general noise from 6 am to nearly midnight everyday, plus overnight noise which keeps me awake. Its too much noise. Driving me crazy.
- Children have high asthma rates already
- Wildlife would disappear (in water and air)
- Respiratory illness from air pollutants
- When the air is wet with fuel it feels like I am choking, as it is wet it is heavy. It affects children more.
- Explosion risk due to fuel transport
- Unpleasant smells from plane / jet fuel
- "Formal studies are needed (most reports are 2nd hand stories)
- Health Study - What is the current health condition of the community?"
- Multiple construction projects are and continue to take place simultaneously
- Constant stress of planes overhead
- The parks, Little Norway, Coronation Park, Music Garden stink of Kerosene. This is not an exhaust. What am I breathing?
- Migratory path
- Impact on wildlife

- Safety of community members from traffic (seniors, children, compromised mobility)
- Length of traffic lights doesn't allow people with mobility constraints to cross
- Six people on my street in Beaches had cancer in the last two years, all under 60 and non-smokers
- "Pollution
- parking in residential areas with engines continuously running, also adding to congestion"
- For the report, noise measurement, use both DAB and DC decibel measurements, as DAB is not a valid measure of airport noise. DC includes bass noise.
- Bird migration area must not be disturbed.
- The fumes enter our buildings.
- There are days the air is wet with fuel. What is happening and what am I breathing then?
- Psychological distress from noise especially children and elderly
- Traffic of fully loaded 707 operation will not be supported by 50% reduction of Queen's Quay Road capacity; more idling pollution
- During September the activity and noise at the airport was noticeably diminished (authentic?)
- Major public consultation on health impacts needed.
- A building to building health survey (not on internet) should be done on Bathurst Quay of residents, school, daycares
- Both airborne and physical vibration of airport operations impact sleeping and living quarters, windows and walls
- "Violates core principles of central waterfront plan Re; clean/green environment
- Deteriorating negative impact on quality of life for Bathurst Quay and Central waterfront residents
- Encroachment of runway into harbour"
- Aircraft fumes along calm water shoreline are concerning re pollution concentration
- Ward 32 already affected; ward 36 affected
- Taxis not included in noise factors
- Tanker trucks of fuel through neighbourhoods. Trucks are also sources of pollution as they use diesel

Record of Post-its from Environmental Open Space Posters (continued)

Comments Posted by Workshop Participants on Scenario 2 Poster

- Impact on existing park and playground (little Norway)
- Noise and air effects on children
- Needs to be no net air pollution / noise increase
- Harbourfront school kids – increase in traffic impacts, collisions, air pollution and noise
- Proposal to accommodate parking demands on Bath – Quay negates objective of a transit focused central waterfront
- Respiratory illness from air pollutants
- Impact on wildlife
- Pollution: breathing, film on buildings, etc.
- Air contaminants causing reproductive abnormalities
- Effects of noise levels on cardiovascular health – increased risk of stroke, increased coronary artery disease (BMJ article August 2013)
- Hormonal disruption impacting hormonal balance caused by increased amount of contaminants
- Diesel fuel is considered a high risk carcinogen in the June 2013 Carex Canada indicators of exposure of known, suspected carcinogens diesel is one of the two high priorities in outdoor air
- Fuel storage of the airport , what would be the increase?
- Does de-icing count as runoff? Are the impacts to water quality studied?
- Worn rubber on the runway washes into the water?
- Water quality related to fuel spillage
- Carbon footprint of short haul flights is orders of magnitude greater than train / bus (63 kg/passenger aviation, 52 kg/passenger for train, 43 kg/passenger for bus, from Department of Transport UK)
- Measures in place to mitigate risks of Lac-Mégantic
- Fuel transport increase through the city
- Loss of real estate value and impact on tax revenues.
- Impact of increased parking required
- Impact on public money spent on revitalization of waterfront.
- Economic impact of displacement from Pearson
- Consider the goals of the Toronto Harbour Remedial Action Clean-up Plan

- Consider the final report of the Royal Commission on the future of Toronto Waterfront titled "Regeneration Toronto's Waterfront and the Sustainable City" - Commissioner Honourable David Crombie December 1991
- Save our Little Norway Park. No exercise of easement by the Port Authority.
- Water quality.
- There is NO solution to the traffic mess proposed. How can this proceed?
- Evaluate the impact on the playground and park that are used for a children's summer camp.
- Consider the goals of the Official Plan for the Waterfront.
- Measurement of odours and black dust/grease on outside furniture.
- Unpleasant smells from plane fuel.
- Reduced flows of currents off the western gap will cause ice formation and build up in the inner harbour causing transportation risks to the Island, the school's filtration plant and the community.
- The Children's playground beside the ferry dock, it is for pre-school children and is directly across from the airport, it stinks of diesel.
- Increased asthma rates.
- More hospital visits for respiratory illness.
- Increased fuel and de-icing into the water.
- Destruction of peace of boardwalk, lake, homes and beaches.
- Do the fuel tankers have to cross the run ways to be transferred into tanks? How will this work with increased take-offs and landings? Has anyone modeled this dance?
- The air quality is already bad. The benzene, NOx and particulate matter levels are already exceeded. AAQC (all source study) should be used. More emissions equals more sickness.
- Increased water contamination from landfill and flow change in and out of the harbour.
- Parks and recreation: the airport is in "open space", noise and air will degrade the park experience for all of Toronto (park visitors)
- Access to healthy forms of recreation (especially for kids) lack of green space/increase of traffic, polluted waterfront.
- Looking at EDI (early developmental index) the Waterfront already has an unusually high percentage of kids scoring low on physical health and development. Adding more toxins/lack of recreational space could make this issue worse.
- Children hearing and noise.
- Additional stressors in the neighbourhood (i.e. food security) adding to the problems.
- The Waterfront is a spot for vulnerable populations to be peaceful, enjoy nature. It is a form of inexpensive recreation.
- Health effects from noise - sleep deprivation and concentration.
- cumulative effects of the Gardiner, diesel trains and excess traffic on top of the airport.

- Cumulative respiratory health including asthma and childhood asthma. Exposures to toxins - cancer and reproductive effects.
- MOH (Ministry of Health) is mandated to apply precautionary principle – that needs to be applied here
- Potential for crash. See Santa Monica last week. Lisa Roitt: bridge is essential for adequate response to a crash.
- Tanker trucks of fuel through neighbourhoods. Trucks are also sources of pollution as they use diesel.
- Check the compliance with the airport re: de-icing fluid, it gets dumped in the sanitary sewer.
- Bathurst Quay is becoming unlivable from noise, air pollution and congestion. The school very loud. This is a disaster for the community.
- More vehicle traffic which increases the risk of accidents.
- Increased chemical spillages in local ecosystems.
- December decision wont be deferred. Transport Canada won't have addressed on MEZ.

Record of Post-its from Environmental Open Space Posters (continued)

Comments Posted by Workshop Participants on Scenario 2 Poster

- Impact of union Pearson on air shed
- Drinking water quality from extending runway (stirring up of water)
- Respiratory illness from air pollutants
- Impact on wildlife
- Pollution – breathing, film on buildings etc.
- Pollution to the inner harbor from the Don River could build up in sediments if flows out the gap are reduced but lake filling contaminated sediment
- Emergency response, remember that the Mississauga train derailment almost resulted in the need to evacuate the city core and island (the wind changed) are the plans in place?
- University of Melbourne study should be included
- The black carbon by not having a buffer zone
- Lack of preparedness plan in case of disaster (crashes, fires, increased traffic accidents)
- Noise impact on child learning
- There are issues with the quality of soils used for lake fill. Much of it contains historic contaminants (lead etc.)
- Water quality
- Ontario medical association estimated in 2008 that smog caused over 2,000 premature deaths in Toronto. If jets at Billy Bishop, even more smog, they may bring more premature deaths.
- Jets fly lower ascent/descent, more noise, pollution, stress and health issues
- Effects due to decreased recreational space, decreased quality of recreational activities leads to increased stress, increased cardiovascular disease, decreased quality of life
- Ministry of Health (MOH) is mandated to apply precautionary principle – that needs to be applied here
- Lack of data on health impact of exposure to UFPs (ultrafine particles)
- Unpleasant smells from plane fuel
- Where is the precautionary principle in this proposal? We already know air pollution kills / our air shed is saturated
- PAHS are genotoxic, future generation of risk for cancer regardless of exposure
- Number of children in neighbourhood – they are more vulnerable to environmental toxins, effects of exposure to black carbon are cumulative, impact of PAHs on neurodevelopment – behavior, memory, learning
- Lack of study of current airport's impact on health
- Our air is already full, cannot tolerate more

- Cumulative air quality assessment Wards 30 + 30 Oct 18, 2011 (Ron MacFarlane, Toronto public health)
- Diesel fuel is considered a high risk carcinogen in the June 2013 Carex Canada indicators of exposure of known, suspected carcinogens diesel is one of the two high priorities in outdoor air
- Fuel storage of the airport , what would be the increase?
- Does de-icing count as runoff? Are the impacts to water quality studied?
- Worn rubber on the runway washes into the water?
- Water quality related to fuel spillage
- Carbon footprint of short haul flights is orders of magnitude greater than train / bus (63 kg/passenger aviation, 52 kg/passenger for train, 43 kg/passenger for bus, from Department of Transport UK)
- Measures in place to mitigate risks of Lac Megantic
- Fuel transport increase through the city.
- Loss of real estate value and impact on the ravines
- Impact of increased parking required
- Impact on public money spent on revitalization of waterfront.
- Economic impact of displacement from Pearson
- Reduced flows of currents of the western gap will cause ice formation and build up in the inner harbour causing transportation risks to the Island, the school's filtration plant and the community.
- Increased asthma rates.
- More hospital visits for respiratory illness.
- Increased fuel and de-icing into the water.
- Loss of real estate value and impact on tax revenues.
- Increased water contamination from landfill and flow change in and out of the harbour.
- Translation of physical measurements into health impacts: deaths from more smog (air traffic).
- Jet fuel, runoff and runoff water under the airport goes directly to the drinking water of the lake with no filtration.
- Blue flag beaches will be contaminated by jet fuel.
- Contributing to higher climate change: short haul flights vs. trains.
- People exercising are more vulnerable to air pollution. The waterfront is used for walking, boating, biking etc.
- Flue as slots increase, toxicity increases. Dr. McKeowan said it is not acceptable before but they want to add.
- Air will get rose if air is already a problem. More jets and more cars.

- Health impacts. Already existing dangerous load. Transportation already identified as problem.
- More people will get sick which means more health dollars.
- Why are we spending money cleaning up the Portlands only to fly big jets over them?
- Where does the fuel come from? Via what transportation route from the refineries and what are the associated risks on those routes? (Not limited to the GTA).
- The less green space means the less physical activity, less community gardens, increased CO2 and increased climate change.
- Effects of toxins on reproductive health.
- Climate change Is expected to bring more intense storms to the Great Lakes Are there implications for expansion. This is a scenario that deserves consideration.
- Concerned with multiple environmental impacts. 1. Pollution from diesel train in 2015. not being considered. Need Metrolinx report. 2. more petroleum trucks will be needed.
- Effects on water quality (drinking water for Toronto). The more water pollutants the lower the water quality for recreational purposes.
- Potential for crash. See Santa Monica last week. Lisa Roitt: bridge is essential for adequate response to a crash.
- Tanker trucks of fuel through neighbourhoods. Trucks are also sources of pollution as they use diesel.
- Drinking water quality from extending the runway (stirring up of water).
- Increased traffic, plus the school and more pedestrians means more accidents.
- Check the compliance with the airport re: de-icing fluid, it gets dumped in the sanitary sewer.
- Bathurst Quay is becoming unlivable from noise, air pollution and congestion. The school very loud. This is a disaster for the community.
- More vehicle traffic which increases the risk of accidents.
- What are the impacts on the natural habitat (fish). We eat these fish.
- Effects of increased air pollution on respirators, health: increased asthma in children, increased air carcinogens.
- Increased chemical spillages in local ecosystems.
- Environmental impacts on park and further encroachment. Less ability for community enjoyment. Council will lose the ability to control future expansion of the airport if the runway is expanded and flights are permitted to Florida, California, within Canada, the Caribbean etc.
- December decision wont be deferred. Transport Canada won't have addressed on MEZ.

Record of Post-its from Social and Cultural Open Space Posters

Comments Posted by Workshop Participants on Scenario 1 Poster

- Conflict resulting from ongoing debate without results (for me 27 years) has escalated to physical violence
- Anger & frustration with traffic, parking, taxis and lack of the usual retail, community & health support in a normal community
- Impact on daily activities. Unable to open windows, sit on balcony, hold a conversation, watch TV during run-ups
- Traffic. Already at capacity, expansion makes it worse
- Lack of sleep because of noise related health impacts. Stress. Impact on sleep patterns. Light pollution.
- We do not want to see the lake paved over, what happens to party boat incomes? Also all boaters/kayaks
- School in neighbourhood. Impacted by increased traffic, air pollution, noise.
- Cultural impact music garden will probably close
- Kids cant play in the park
- Bathurst Quay is a mixed income community that will disappear
- Traffic. Access to community centre reduced.
- Social/Cultural. Threat to demolish school and community centre. Loss of vital neighbourhood services.
- If Airport expands Toronto Port Authority will exercise their right to take over 100 meters of Little Norway Park. This park is used for summer camp.
- Do you have a clear picture of who lives, works in the community, multi-cultural, multi-family levels, single parent families, a high level of mental health consumers, a baby boom has stretched day care services beyond capacity homeless population.
- Cultural and social. Windward coop bldg. designed for handicapped on subsidy who do not have option to move away affecting livability
- There is a feeling of helplessness over lack control over living environment
- The constant fear mongering over the loss of the school or community centre, park land, and access are taking their toll
- Seniors have become a huge (many with fixed incomes) population, many have health problems isolation and need more accessibilities
- Airport traffic in Bathurst Quay neighbourhood is currently unacceptable. Mitigation proposals surround our school unacceptably with roads or take park land for transit

Record of Post-its from Social and Cultural Open Space Posters (continued)

Comments Posted by Workshop Participants on Scenario 2 Poster

- Traffic
- Lack of sleep and stress - noise and light pollution
- Impact on day activities. Unable to open windows, sit on balcony, hold a conversation, watch TV during run-ups
- School in neighborhood - impacted by increase traffic, air pollution, noise
- Problems will not be solved by resident turnover as measured impacts will remain and degrade community over time
- Safety issues. Anxiety of parents re taxis. Anxiety of residents re a potential crash and insufficient rescue measures. Sleeplessness of residents.
- Demographics of island community need to take into account that it is predominantly an elderly population. Many wonder about cancer incidence there.
- The constant fear mongering over the loss of the school or community centre, park land, and access are taking their toll
- There is a feeling of helplessness over lack control over living environment
- Lack of greenspace as park will be removed due to Toronto Port Authority right of way
- Neighbourhood completely stressed - intermittent noise is more stressful than background levels
- Residents need greenspace to de-stress and relax. Increased noise, pollutants, traffic, are not conducive to relaxation and de-stress.
- The area is crowded by summer events. We are overwhelmed with traffic and exhaust as it is.
- Consider diverse users and uses of the waterfront.
- What is the health effect of airport replaced by recreation park lands?
- Medevac'ing at the Island Airport saves lives. It is the closest to hospitals. As well as the ability to make emergency crossings of the runway during the winter for island health emergencies when the harbour is iced in.
- "Growing air traffic conflicts with ability of people to enjoy the waterfront for festivals, concerts and peaceful experience
- conflicts with boating community in harbour and the Western Gap."

Record of Post-its from Social and Cultural Open Space Posters (continued)

Comments Posted by Workshop Participants on Scenario 3 Poster

- Island residential community - noise, flight paths, stress, contaminants, destroy close knit community
- The Island Natural Science school in the park is most Toronto School kids' first experience of the natural environment
- If there was an expansion the construction would make life unbearable. We have endured years of airport construction.
- Waterfront is residential and recreational, industry should not exist with residences and parks
- Toronto residents feel that their voices are not heard - people want a vibrant neighborhood not a huge airport
- Environmental Stress - Ecology: already a tipping point of many stresses, air, land, water
- Lack of sleep and stress - light pollution
- The constant fear mongering over the loss of the school or community centre, park land, and access are taking their toll
- There is a feeling of helplessness over lack control over living environment
- Everyone visiting beach is exposed to jet fuel
- Impact on daily activities. Unable to open windows, sit on balcony, hold a conversation, watch TV during run-ups
- Island community keeps the waterfront safe and airport expansion threatens the health and stability of the community
- Toronto is trying to return to enjoyment of waterfront: clean air, water, soil, recreation - not going in reverse.
- We cannot have alternative energy sources in Toronto because the airport will not allow windmills on the waterfront
- Traffic: congestion, taxis, need for improvement of public transit
- Executive communities with open distain for impacted communities
- Degrades park user experience: air, noise, stress
- School in neighbourhood - impacted by increased traffic, air pollution, noise
- Impact on recreation - especially for low income families who rely on island for outdoor recreation
- Diminishment of enjoyment and loss of green space in inner city. The island is a refuge and treasure to users. Many are new Canadians and are low income people who do not have alternatives (cottages)

- Depletion of enjoyment of local parks, Toronto Island impact negatively on all Toronto lands
- The UN (United Nations) Second Report - just out - is tied to the determinants of health
- Education of children at natural science school - they are there to study the natural environment

Record of Post-its from Economic Open Space Posters

Comments Posted by Workshop Participants on Scenario 1 Poster

- Sleep deprivation increases stress and loss of work hours (productivity)
- We do not see the tourists and Europeans are appalled that there is an airport so close to residences
- "Dark film and balcony and boats
- Cost of cleaning the brickwork and HVAC systems over time"
- Current ground congestion/conflicts with taxis, buses, cars and pedestrians already a mess
- Conflicts with school kids
- Building a healthy city through waterfront revitalization - an airport undermines this - Land use compatibility
- Beach used by picnics by immigrant families and tourists. Air traffic destroys this, takes away tourism
- The hangars for the Dash 8 and the Q400 are not big enough for the CS100. Where are the new hangars going to go and what are the cost implications of this?
- Co-op members at Bathurst Quay are for the first time leaving the area because of airport traffic and noise, co ops will go under if they suffer too much vacancy loss
- Volume of cars turning south along lakeshore affects business viability core
- Cost income due to sleep deprivation of individuals
- Impact on local business - positive or negative? Increased foot traffic or maybe just passing through by car?
- Airport fumes along water not welcoming to tourists
- People don't want to come to the waterfront because the airport traffic is so problematic
- Economic costs need to be considered as well as alleged benefits
- "The children must cross the street to go to the school or the park
- When they play outside they have to breathe the car pollution and the plane fuel
- The preschool children planted vegetables last year and ate them for lunch, but we were concerned about the soil which we added city compost soil to, but still felt car exhaust was present"
- Cost of health impacts, i.e. sick days (asthma) and hospitalization
- Positive economic factors do not seem to address the wellbeing of all the people who are unemployed and underemployed
- "The Bathurst Quay Co-ops were not sound proofed when build in the early 1980's because ""only a limited number of short takeoff and landing (STOL) flights allowed at airport""

- Now we need Port Authority to mitigate current bad conditions by paying for triple glazed windows and balcony doors and par for rental air conditioning for these"
- Increased light pollution and brightness affects sleep patterns
- Ghettoization of neighbourhood and probable vacancy loss due to noise, traffic and pollution
- Economic disparity - ghettoization of Bathurst Quay neighbourhood
- Costs to building owners for additional cleaning, noise reduction strategies, enhanced air filtration systems
- "MOE noise criteria: Noise Exposure Forecast (NEF) = 0 - not met
- loss of sleep"
- Economic costs of upgrading towers to meet MDE (as per tripartite)
- "Harbourfront child care has 15 infants, 16 toddlers
- The air pollution from cars and buses (TTC + Porter + tour buses) trucks from the airport and Lakeshore and Gardiner affects the children who are outside 2 hours a day on average
- The noise from the run-up is so loud they cannot use the playground located on the west side of 650 Queen's Quay W.
- St. Stephen's Waterfront childcare centre has 36 children 2.5 - 5 years
- The air pollution now affects the children who have asthma and allergies
- The centre is located on the southwest end of the building and the windows face south - the vehicles along the Erin Quay are constant
- If the traffic lights fail, the cars do not stop for pedestrian traffic
- With more jets there will be more people driving, walking through the neighbourhood and going or coming from the airport
- The childcare infants are in triple seat and four seater strollers - the taxis and buses will cut the strollers off, or children crossing
- When there is a flight arriving or departing - cars will fill up the intersection blocking the crossing of pedestrians
- Cars park in the neighbourhood side streets idling - while waiting for passengers"
- Our neighbourhood is being sacrificed for the airport. It will soon be a slum.

Record of Post-its from Economic Open Space Posters (continued)

Comments Posted by Workshop Participants on Scenario 2 Poster

- Increase in healthcare costs associated with more illness and hospital visits
- Loss of value in waterfront land due to worsening environmental and health conditions
- Reduced Property values
- Islands are a tourism drain and waterfront revitalization is ruined and billions lost
- Too much turn over of owners in Bathurst Quays South Beach condos and 650 Queen's Quay condo (Atrium) for a healthy neighborhood. They say they are fleeing airport
- Economic expansion of flights contrary to public vision to revitalize central waterfront for mixed use, 1 private vision replaces public vision
- With an increase in air traffic the noise will increase for run-ups. These are so loud that they disturb the sleep of infants, toddlers - this disturbed sleep leads to stress which affects the health of the children and their parents and the child care teachers
- Devalues the Portland's (future mixed use community)
- We pay to clean soil and service then devalue with noise and pollution
- Costs to building owners for additional cleaning, noise reduction strategies, enhanced air filtration systems
- Traffic, no capacity to bring cars to city, more gridlock. Congestion, more emissions = costs
- Sleep deprivation increases stress and loss of work hours (productivity)
- Cost of health impacts, i.e. sick days (asthma) and hospitalization
- Positive economic factors do not seem to address the wellbeing of all the people who are unemployed and underemployed
- Co-op members at Bathurst Quay are for the first time leaving the area because of airport traffic and noise, co ops will go under if they suffer too much vacancy loss
- Economic disparity - ghettoization of Bathurst Quay neighbourhood
- Noise - impact on daily activities/interruptions to activities (employment, social)
- Ghettoization of neighbourhood - probable vacancy loss due to noise and pollution
- Increased cancer cases
- Class action suit by frustrated residents
- Learning environment diminished due to noise - children will not excel in future economy
- "Mixed income area / many RGI units - people can not afford to relocate
- Similar to St. Lawrence concern - ideal urban community"
- Cost of moving school and community centre proposed by the Toronto District School Board and Henry Pankratz at 80 million (Building 650 car garage)

Record of Post-its from Economic Open Space Posters (continued)

Comments Posted by Workshop Participants on Scenario 3 Poster

- Increase in healthcare costs associated with more illness and hospital visits
- Loss of value in waterfront land due to worsening environmental and health conditions
- Reduced Property values
- Islands are a tourism drain and waterfront revitalization is ruined and billions lost
- Too much turn over of owners in Bathurst Quays South Beach condos and 650 Queen's Quay condo (Atrium) for a healthy neighborhood. They say they are fleeing airport
- Noise impact on daily activities and interruptions to activities (employment, social)
- Economic impact of increased asthma, sick days, mortality
- Ghettoization of neighbourhood
- Probably vacancy loss due to noise, pollution
- Studies do not look at total cost of expansion(incl. surrounding infrastructure (public transportation, roads etc.)
- Lost income due to increased sick days
- Evolution of a mini Pearson threatens the future private sector investment of central waterfront
- Toronto only has 1 waterfront, must protect it
- Destruction of beach will hurt businesses near waterfront
- Populations with low socioeconomic level will be negatively affected by expansion without any significant benefits
- Increase in cancer cases
- Positive economic factors do not seem to address the wellbeing of all the people who are unemployed and underemployed
- Economic impact of less greenspace/tourism
- Costs to building owners for additional cleaning, noise reduction strategies, enhanced air filtration systems
- "With the jets - noise will be louder - more constant
- Children's health - breathing/ sleeping, etc. will be disturbed"

Record of Post-its from Environmental Stress Poster Created by Workshop Participants

- Risk of passing the "tipping point".
- Accumulation of impacts results in exponential accumulation.
- Counter to five decades of thorough and civic investment on the waterfront.
- Lots of sleep deprivation. Backup beepers at the airport currently. Lots of noise from tunnel construction. Too much light at night from the airport. I no longer have to turn on lights when I wake up at night.
- Afraid a plane will hit in bad weather. I live 350 meters from the airport. Safety.

APPENDIX B.3

Breakout Session 1 Worksheet

November 2013
Report No. 13-1151-0215

Expansion is "more of the same"

WORKSHEET – Breakout Session #1

Health Impact Assessment Workshop
Billy Bishop Toronto City Airport

"Task 1" Q1

Scenario 1: Current Conditions

Prioritize the *positive* and *negative* impacts identified in the previous exercise by grouping them into the following three categories.

Most Important
Sleep deprivation • Many different types of impacts on same people @ same time Lack of time leads to lack of democracy → health indicator Civic divisiveness related to process. - Disabled, elderly, low income people who cannot move away - Children's learning affected → long-term impacts + economic impacts - Scale of BBTCA is beyond the "adverse impact test" – creating multiple impacts. Beyond limits of tripartite agreements.

~~Important~~
- seems like more cases of cancer; maybe need cluster investigation. ~~.~~ Balance - ~~=~~ no one use should dominate the rest. Idea of cottage @ the waterfront Airport is currently tilting the balance.

~~Less Important~~

WORKSHEET – Breakout Session #1

Health Impact Assessment Workshop
Billy Bishop Toronto City Airport

Scenario 2: Expansion to include Bombardier Q400 only, with more passengers

Prioritize the *positive* and *negative* impacts identified in the previous exercise by grouping them into the following three categories.

Mos

Imp

Le

A Cautionary Note

The constant co-opting of informed dissenters into "consultations" ~~that~~ for which the fix is already in, lead many from creative scepticism to outright cynicism thus undermining ~~the~~ democratic process and helpful civic engagement. DO NOT RUSH THE PROCESS. DEFER the Decision

WORKSHEET – Breakout Session #1

Health Impact Assessment Workshop
Billy Bishop Toronto City Airport

"Table 2" ok

Scenario 3: Expansion to include Bombardier Q400 and CS100 Equivalent Aircraft (new jets)

Prioritize the *positive* and *negative* impacts identified in the previous exercise by grouping them into the following three categories.

Most Important
Evolution into mini-Pearson does not fit w paid/public vision of Waterfront Traffic will get worse - personal vehicles due to luggage will dominate Ground-related operations of expanded airport result in multiple health impacts including increased air pollution traffic, road safety for peds, cyclists, elderly. Conflict with waterfront Revitalization. ↳ public accepted vision of live/work,
~~Important~~
Economics – $ has been invested in condos / unanimous public + private – Fort York N, Liberty Village, City Place, adoption Harbourfront. Music Garden remake of Queen's Quay Economics - challenges w work @ home for businesses loss of appealing public space, recreational space

~~Less Important~~
Vision that exists w protection of waterfront, parks etc. is more protective of health than ~~the~~ what is happening w airports – traffic + safety, schoolchildren, cyclists hit, peds Eg. rollerblading cycling vs. taxis moving past quickly - commute route for cycling disturbed – should ↓ traffic congestion ↳ economic impacts

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WORKSHEET – Breakout Session #1

Health Impact Assessment Workshop
Billy Bishop Toronto City Airport

Table 3 C1

Scenario 3: Expansion to include Bombardier Q400 and CS100 Equivalent Aircraft (new jets)

Prioritize the *positive* and *negative* impacts identified in the previous exercise by grouping them into the following three categories.

Most Important

Airport expansion undermines decades of effort to make the waterfront clean, green, accessible.

Most Important

1) Air pollution already over legal limits – expansion will make it worse.

2) Expansion of runway threatens marine habitat and waterfront users on land and in the lake.

Most Less Important

3) Airport expansion Harms economy.

4) Noise is already waking people up, disturbing sleep.

5) Bird strikes could increase

6) Parklands, cultural events on harbourfront threatened by expansion.

7) Children, people who go to Island are especially threatened.

TABLE 4

WORKSHEET – Breakout Session #1

Health Impact Assessment Workshop
Billy Bishop Toronto City Airport

WE DID NOT PRIORITIZE – THESE ARE ALL IMPORTANT

Scenario 3: Expansion to include ~~Bombardier Q400~~ and CS100 ~~Equivalent~~ Aircraft (new jets)

Prioritize the *positive* and *negative* impacts identified in the previous exercise by grouping them into the following three categories.

~~Most Important~~

- opens door for all carriers as well as private jets.
- undermined decades of work on Toronto waterfront for clean, green, accessible.
- Air pollution already exceeds allowable limits; expansion with jets will compound the problem.

~~Important~~ (represents a quantum leap).

- Expansion of runways, due to jets, will ~~hinder~~ threaten marine habitat and people's use of the waterfront.
- Economic: undermines potential development along the waterfront, such as portlands ← diminishing effect on posterity, especially vulnerable populations such as those who cannot afford cottages.

~~Less Important~~

- Noise effects health and negative impacts on well being; interrupts sleep; increases stress;
- Concentration of people in the Bathurst/Lakeshore area is already beyond capacity; increased jet traffic will compound the problem.
- Traffic + transportation – air pollution due to any expansion.

OTHER

- Especially vulnerable are people who do shiftwork and cannot rest during high-traffic times. Children as well.
- Increased risk of bird strikes.

- Cannot use the parks and gardens in the waterfront (cultural, experiential)
- Lost opportunity to create a place of solace along the waterfront: Waterfront is common use, and part of our culture. An expanded airport does not fit into this vision for the waterfront as a family destination. Should not be perceived as a localized issue; the waterfront is used by 1,000's across the city.

* THE WATERFRONT IS THE COTTAGE COUNTRY FOR THE ENTIRE POPULATION OF THE CITY. *

- Impact to currents as a result of runway extention will impact ecoli levels, and result natural water flows. Water borne illness for those at Hanlan's point.
- Lack of input from federal environment and fisheries ministries.

The health & welfare of the many should override the convenience of the few.

Table 5

WORKSHEET – Breakout Session #1

Health Impact Assessment Workshop
Billy Bishop Toronto City Airport

continued on page 2 – + is the same for scenario 2+3

Scenario 1: Current Conditions

Prioritize the *positive* and *negative* impacts identified in the previous exercise by grouping them into the following three categories.

Most Important
We want to know the baseline scenario (ie: no airport just parkland). Are there issues + concerns (health, noise, air quality) that are already effecting the environment + people. Air Quality ⇒ children's health (more vulnerable population) → ~~PAH~~ affecting children's learning, cancer, fetal growth retardation etc → Nitrogen oxide, PM

Important
Include recommendations from Santa Monica HIA into mitigation.

Less Important
Include the recent on noise into current HIA referenced

There is no study on the current health conditions w/ Billy Bishop.

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Table 5

WORKSHEET – Breakout Session #1

Health Impact Assessment Workshop
Billy Bishop Toronto City Airport

Scenario 2: Expansion to include Bombardier Q400 only, with more passengers

Prioritize the *positive* and *negative* impacts identified in the previous exercise by grouping them into the following three categories.

Most Important

- The contribution of the impact not only on the smaller population close by but also on the general population. - Also looking at the cummulative Air Quality issue w/ current pollution in city.
- ~~Overlooking at~~ NOISE - particularly to vulnerable pop. close to airport.

Important

- Put an air quality monitoring station close to airport - so we could see the AQ near the airport - put it at the school.

Less Important

Look at vulnerable population such as children + seniors + low income populations whom the mix of stressors - lack of recreation, air quality, noise, food security, poverty, toxins - are not cummulative ~~effects~~ they have exponential effects on health.

TABLE 5

WORKSHEET – Breakout Session #1

Health Impact Assessment Workshop
Billy Bishop Toronto City Airport

Scenario 2: Expanded Service PROPS only

Scenario 1: ~~Current Conditions~~

Prioritize the *positive* and *negative* impacts identified in the previous exercise by grouping them into the following three categories.

Most Important
See scenario #1 - Scenario #2 will lead to more of scenario #1

Important

Less Important

TABLE 5

WORKSHEET – Breakout Session #1

Health Impact Assessment Workshop
Billy Bishop Toronto City Airport

SCENARIO #3

Scenario ~~2~~: Expansion to include Bombardier Q400 only, with more passengers

Prioritize the *positive* and *negative* impacts identified in the previous exercise by grouping them into the following three categories.

Most Important
↓ See Scenario #1 – Scenario #3 will lead to more ↓ Scenario #1 We want no ↑ in local emissions or impacts

DON'T MAKE ANYTHING WORSE

Important

Less Important

WORKSHEET – Breakout Session #1

Health Impact Assessment Workshop
Billy Bishop Toronto City Airport

Table 6"
G1

Scenario 1: Current Conditions

Scenario 2, Scenario 3.

Prioritize the *positive* and *negative* impacts identified in the previous exercise by grouping them into the following three categories.

Most Important
1. Impact on young children – noise interferes with learning, – sleeping – air pollution creates health problems. respiratory issues – speech development both childcares & school. – idling cars seniors, people with mobility issues - safety issues – plane accidents close to neighbourhood. – cars racing through intersections & driving through neighbourhood, parking in neighbourhood, taking over bike lanes to park cars.

Most important

most important →

Important
ongoing construction – diesel particulate matter – large trucks in neighbourhood – dangerous to pedestrians especially children. – landfill disturbs lake sediment – Quality of life – Music garden, Coronation park, Little Norway Park – boating people –

People with mental issues living in the neighbourhood have low tolerance levels for stresses

most important →

Less Important
– noise echoes off buildings + water – makes it lonelier – community has become divided over these issues. Airport personal live in neighbourhood landfill in harbour – affects lake organisms – disrupts the sediment from the bottom –

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WORKSHEET – Breakout Session #1

Health Impact Assessment Workshop
Billy Bishop Toronto City Airport

Scenario 2: Expansion to include Bombardier Q400 only, with more passengers

Prioritize the *positive* and *negative* impacts identified in the previous exercise by grouping them into the following three categories.

Most Important
Tolls on ① Bathurst St + Erin Quay – North & south ② Queen's Quay W east bound lane These tolls should go to the community directly to mitigate the negative affects on the community – child care, community centre, school, community groups.

Important
Increase in stresses on the community There is an increase number of children families with young children moving into this community. There is not enough funding for young adults, school age children, young children programs. There is not enough affordable child care available for additional

Less Important
Amenities – lacking affordable stores etc. lack of affordable food stores ie supers for fresh co etc. Transit is compromised with the amount of vehicular traffic (slow) onto the lakeshore, Bathurst, Queens Quay, Erin Quay, Gardiner & Spadina

WORKSHEET – Breakout Session #1

Health Impact Assessment Workshop
Billy Bishop Toronto City Airport

Table 7 "G"

Scenario 3: Expansion to include Bombardier Q400 and CS100 Equivalent Aircraft (new jets) Scenario 2 & 1 are the same.

Prioritize the *positive* and *negative* impacts identified in the previous exercise by grouping them into the following three categories.

Most Important
-Cumulative impacts of Noise, Air, Water: Impacts on the city of Toronto. -Existing use of the waterfront will be destroyed: Ecological impacts are detrimental -Water ~~Increased ice build-up in the inner harbour~~ ↳ increased toxins in and around the island airport -Volumes of fuel that has to be transferred to the airport (i.e Negative) -Increased toxins in the Air shed for Toronto -Increased economic impacts due to ~~health~~ hospitalization & loss of productivity. -Economic damage to the investment on Toronto waterfront revitalization -Negative impact on waterfront TO development on East Bayfront

Important

NOT

~~Less~~ Important
Interests of one private entity Basing economic impact on the current economic study by the city as it only focuses on "benefits" of the expansion Basing the Noise models on unsubstantiated data since the airplanes in question are not certified by Transport Canada.

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APPENDIX B.4

Comment Forms and Emails

John Prowse
BQNA.

Comment Form

Health Impact Assessment Workshop
Billy Bishop Toronto City Airport

Thank you for taking the time to attend this workshop and provide your valuable feedback. Please use this space to record any other issues or concerns you would like to be considered by Toronto Public Health as part of the Health Impact Assessment. This form will also be distributed electronically.

Re: Background noise reports - JACOBS Consulting report one of the noise monitoring units was on my balcony. I reviewed the results of the study and the only reading reported from my location was when the wind direction was favourable to the airport (ie blowing South). The consultant at Jacobs admitted at the public consultation on the draft report that wind direction did affect noise readings. I was also the community rep on the consultation w/ Jacobs and our concerns and suggestions were always secondary to the interest of the airport & their client the Toronto Port Authority.

Since there are no public studies available I would suggest you look at public studies published in other areas. For example the study done in England reported in Wed Oct 9 Toronto star. Cit recommends city councils to consider its findings before expanding into a neighbourhood

You can submit this form today by giving it to one of the facilitators. If you would like to take more time to provide comments, you can also submit comments directly to sgower@toronto.ca or take this form home with you and submit it by **October 16, 2013** to:

Stephanie Gower, PhD
Toronto Public Health
277 Victoria St, 7th Floor
Toronto, Ontario, Canada, M5B 1W2

October 9, 2013

TORONTO Public Health

Golder Associates

1/3

Comment Form

Health Impact Assessment Workshop
Billy Bishop Toronto City Airport

WATER POLLUTION 1

Anonymous 1

the time to attend this workshop and provide your valuable feedback. Please use any other issues or concerns you would like to be considered by Toronto Public Health as part of the Health Impact Assessment. This form will also be distributed electronically.

POLLUTION T
QUALITY OF WATER HAS NOT BEEN INCLUDED IN THE HIA. THIS IS A GREAT OMISSION OF DATA, AND IT IS IMPOSSIBLE TO DATA MODEL LEGITIMATE FUTURE PATH GIVEN THE LACK OF INFORMATION ON THE CS100 AND TYPE OF JET FUEL USED BY THIS PLANE, FULLY LOADED. THESE EMISSIONS DROP DIRECTLY IN THE WATER, WITHOUT MITIGATION OF MARSHLANDS TO CLEANSE WATER.

IN ADDITION, THE CITED POLLUTANTS DO NOT INCLUDE THE CHANGE IN EMISSION LEVELS OF IDLING PLANES, ESPECIALLY SIMULTANEOUSLY, ELEVATION, AND INCREASED AIR TRAFFIC. AS POPULATION INCREASES IN TORONTO, THE UNION - PEARSON RAIL EXPRESS'S DIESEL EMISSIONS WILL BE ADDED TO THIS EMISSION MIX, HEAVILY CONCENTRATED IN AN AREA WHICH ALREADY HAS POLLUTION EXCEEDANCES FAR ABOVE THE NORM. ALREADY, ASTHMA IS INCREASING IN TORONTO AS A RESULT.

UNDER THE AIRPORT GROUNDWATER HAS NOT BEEN CONSIDERED AS PART OF THIS REPORT, AND SHOULD BE. DE-ICING, RUN OFF OF CONTAMINANTS FROM THE AIRPORT RUN WAY.

You can submit this form today by giving it to one of the facilitators. If you would like to take more time to provide comments, you can also submit comments directly to sgower@toronto.ca or take this form home with you and submit it by **October 16, 2013** to:

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-2-13

Comment Form

Health Impact Assessment Workshop
Billy Bishop Toronto City Airport

WATER POLLUTION 2

Thank you for taking the time to attend this workshop and provide your valuable feedback. Please use this space to record any other issues or concerns you would like to be considered by Toronto Public Health as part of the Health Impact Assessment. This form will also be distributed electronically.

ADDITIONALLY, FUEL FARMS WILL HAVE TO BE CLOSE TO THE AIRFIELDS, AND TRUCKS CARRYING FLAMMABLE JET FUEL WILL GO BY THROUGH RESIDENTIAL AREAS.

THEREFORE I REQUEST, THAT INCLUDED IN THE SCOPE OF THE HIA ARE THE FOLLOWING:

(1) INCREASING THE SCOPE TO INCLUDE WATER POLLUTION, INCLUDING GROUNDWATER UNDER THE AIRPORT, DE-ICING, MARINE HABITAT AND JET THRUST ON THE IMMEDIATE VICINITY FOR RECREATIONAL MARINE CRAFT.

(2) INCLUDING RESEARCH ON THE IMPACT, AND TRANSPORT AND OFF GASSING OF FUEL TRUCKS IN RESIDENTIAL AREAS, AND THE EXPANSION OF FUEL FARMS TO BECOME CLOSER TO RESIDENCES, AND THE POSSIBILITY OF EXPLOSIONS.

(3) CONCERNS THAT SCOPE HAS CONCENTRATED ON THE BENEFITS FOR UNDER 40 CONDO OWNERS, RATHER THAN A WIDER SWATHE OF THOSE AFFECTED - THE ELDERLY, HANDICAPPED, CHILDREN AND THE SICK, - THE VULNERABLE.

(4)

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3/3

Comment Form

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Billy Bishop Toronto City Airport

WATER POLLUTION 3

Thank you for taking the time to attend this workshop and provide your valuable feedback. Please use this space to record any other issues or concerns you would like to be considered by Toronto Public Health as part of the Health Impact Assessment. This form will also be distributed electronically.

④ TO STUDY THE EXTENSION OF RUN WAYS IN RELATION TO WATER CURRENTS NATURELLY CLEANING THE BLUE FLAG BEACHES FOR E COLI AND OTHER CONTAMINANTS, AND HOW IT WILL IMPACT THE CLEANSING.

⑤ TO STUDY THE OFF GASSING + JET THRUST FROM THE JETS ON THE LAKE AND ITS IMPACT ON BOATERS, PARK VISITORS, SWIMMERS BEACH GOERS, AND THE FERRIES.

THANK YOU VERY MUCH.

You can submit this form today by giving it to one of the facilitators. If you would like to take more time to provide comments, you can also submit comments directly to sgower@toronto.ca or take this form home with you and submit it by **October 16, 2013** to:

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Thank you for taking the time to attend this workshop and provide your valuable feedback. Please use this space to record any other issues or concerns you would like to be considered by Toronto Public Health as part of the Health Impact Assessment. This form will also be distributed electronically.

If any expansion is allowed at airport, mitigation required for the Bathurst Quay neighbourhood would be replacing windows and balcony doors in the 4 co-op buildings in the neighbourhood and installing central air-conditioning and installing air-cleaning measures. These should be paid for by the port authority.

Bathurst Quay is a neighbourhood that was created by the city and Harbourfront on former industrial land, as part of a plan to populate the waterfront and create a recreational area.

We were ensured that the Tripartite Agreement would protect the neighbourhood from airport expansion! It must be kept intact.

You can submit this form today by giving it to one of the facilitators. If you would like to take more time to provide comments, you can also submit comments directly to sgower@toronto.ca or take this form home with you and submit it by **October 16, 2013** to:

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Katie's Notes

BBTCA Stakeholder Meeting.

Comments + questions.

→ ~~workers~~ health + safety considered.

→ why 202 STAS? can currently go up to 404. no cap.

→ Diesel carbon, unburned hydrocarbons.

→ what about water quality.

→ rubber from planes?

→ emissions from CS100 – will they change when it is full?

→ are additives added to jet fuel?

→ difference in contaminants at different elevations.

→ lots of references to the Jacobs report.

→ Porter does what they want anyway.

→ what about Air Canada?

→ planes do not stick to the flight paths.

→ planes fly over the beaches all the time very low. Will this be monitored?

→ will you include impacts from the diesel train in the AQ model.

→ Air craft horn will be included? yes.

→ reference to ~~to~~ Stars report ~~to~~ on airport noise to air~~c~~ heart conditions.

Comment Form

Health Impact Assessment Workshop
Billy Bishop Toronto City Airport

Thank you for taking the time to attend this workshop and provide your valuable feedback. Please use this space to record any other issues or concerns you would like to be considered by Toronto Public Health as part of the Health Impact Assessment. This form will also be distributed electronically.

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October 9, 2013

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Katie's Notes

→ Need an ambient noise study with no airport operation to calibrate the model.

→ Porter flies at different times than what it says.

→ ~~wass~~ what about background noise at elevations. DD.= we account for this in the model.

→ Feel scope has been limited without the inclusion of water.

→ A lot of noise happens between 6.40 and 7 am. Thats when people are getting woken up. DD - we have continuous monitors that we can listen in to this period.

→ Will MOHs report go to board of health first or will he have independent ability to report to council? ie MOH writes a synopsis that goes online + report goes directly to council.

→ Asthma days/sick days? Can these be modelled. RM - will try and quantify % air poll in neighbourhood % car etc. as per Wolleville/ South Beaches etc.

→ why are you not looking at any private noise reports? TPA has a vested interest in the report + using their reports will bias the study.

→ Airport was very quiet in September.

→ they were faking run-ups.

Comment Form

Health Impact Assessment Workshop
Billy Bishop Toronto City Airport

Thank you for taking the time to attend this workshop and provide your valuable feedback. Please use this space to record any other issues or concerns you would like to be considered by Toronto Public Health as part of the Health Impact Assessment. This form will also be distributed electronically.

You can submit this form today by giving it to one of the facilitators. If you would like to take more time to provide comments, you can also submit comments directly to sgower@toronto.ca or take this form home with you and submit it by **October 16, 2013** to:

Stephanie Gower, PhD
Toronto Public Health
277 Victoria St, 7th Floor
Toronto, Ontario, Canada, M5B 1W2

October 9, 2013

TORONTO Public Health

Golder Associates

Katie's Notes
→ Are you measuring DBA or DBC?

DP - The standards are in DBA.
→ DBA are not ~~real, I don't~~ a valid measurement of data.
→ DBA are 20% lower than DBC and favour the noise makers.

→ Beaches - 5 toxic chemicals already at dangerous levels. How will you measure them?

TRS - will report in HIA if this is the case.

"Crombies report on regeneration"
→ concerned about considerations listed.

Lakefilling - long term impacts
→ Please go back + look at the other healthy waterfront issues + make sure you are not rendering them. Env health impacts human health.
→ you need to do a more fullsome study.

MC → council are making a decision in December.
→ Info does not go (industrial)
→ Are you looking at Portlands now or in future? (more mixed)
→ lots of concerns about construction.
→ Diesel emissions - $PM_{2.5}$ not valid.
→ smell ~~of school~~ at playground at base of little Norway Park.
→

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(1) Need to consider people exercising outdoors as a vulnerable population. The waterfront is a park + we are encouraged to exercise + be outdoors.

(2) The cumulative impact of transportation + traffic related air pollution – cars – diesel trains – + planes – should be actively monitored + modeled in light of hi population density.

(3) Airplane emissions are hi in sulfate – which is more toxic – so speciation of PM should be considered

(4). How well noise measurements – be translated into health effects – ie: morbidity + mortality.

(5) Is there any way we can model eg → Δ incidence of asthma in children

(6) The waterfront + island is the 'cottage country' for the less privileged and ~~many~~ 'New Canadians' would the mayor want an airport on his Muskoka Lake ??

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There are so many informed, intelligent people here. Doctors, lawyers, environmentalists, community members etc. The only forum we have here is to put all this info on post it notes. This study needs a year! It is not the fault of public health. ~~This~~ Please refer to airshed studies for wards 30/32 S. Riverdale/Beaches in Jun + Oct 2011. We are already over in toxic chemicals to dangerous levels. How can we take more? We also have Portlands Energy Centre! The noise is already bad! The Q400's fly over Beach neighbourhood creating disturbance, stress, + pollution. (what about our water?) Increased risk of bird strikes - dangerous near highly populated city. Waterfront is our culture + identity. Vulnerable populations of children are affected by noise + pollution. The health + welfare of the many should over-ride the "convenience" of a few.

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TORONTO Public Health

Golder Associates

Toronto Island Airport - Harbourfront Community Health Concerns

From: Max Moore, Harbourfront Community Association
maxmoore@sympatico.ca

As a harbourfront resident who lives in view of the island airport, I have complained about airport noise hundreds of times, but the airport dismisses our noise complaints. Most of our complaints are about ground operation noise, which is not regulated by the Tripartite Agreement, and not monitored by the city.

Airplane noise is incredibly loud. The Port Authority dismisses our noise complaints by measuring noise with adjusted DBA decibels, which discount noise readings by 20%. As an audio engineer, I measure airport noise with complete DBC Decibels, which are a more valid measure of noise. This disagreement over how to measure noise is at the heart of the problem. If we can't get an accurate measure of noise, then the airport doesn't have to admit it is making excessive noise. According to the way the Port Authority measures noise, jets are quieter than cars, which is total nonsense. In this way, by using nonsense noise readings, they can continue to ignore noise complaints.

In view of the difficulty of having our problems acknowledged by the airport, or the city, I have documented some of the problems the neighborhood is experiencing, and posted videos on the website, ***www.harbourfrontcommunity.info***. Also on this website is a video I made of airport tunnel construction noise, registering at 85 DBC Decibels, at 4 am. Overnight construction noise is a regular problem, which disturbs our sleep a lot.

From our perspective, island airport noise is excessive, many times a day, but not all the time. Noise from the airport depends on wind direction and cloud cover. When the wind is blowing from the south, airport noise is as loud as thunder, and this noise invades our homes regularly. It's so loud in our homes, we can't hear other people talking, we can't hear phone conversations, and we can't hear the tv in the evening. This causes a state of constant tension, but the most disruptive noise is before 8 am and after 8 pm.

Noise from the airport invades our homes from 6 am until midnight every night. Even after midnight, we are awakened regularly by overnight airport construction and medivac helicopters. The end result is that we suffer from interrupted sleep 3 or 4 nights a week. I have experienced some really bad periods when I was able to get only 4 or 5 hours sleep a night for weeks at a time, due to overnight airport noise.

The end result of airport induced sleep deprivation is a dramatic decline in health, with noticeable symptoms like constant headaches, a pounding heartbeat, and a decline in the immune system's ability to manage even minor problems like colds and flu.

For me, sleepless nights seem to be combining with air pollution to create constant sinus problems, never-ending headaches, and difficulty breathing deeply. My doctor has diagnosed my sinus problems as rhinitis, apparently a common problem for people living near airports. It's like having a mild cold that never goes away. But the biggest problem is the headaches, as they interfere with my ability to function socially and at work.

The bottom line is that living beside an airport makes me feel like I'm aging more quickly than normal. I'm not as healthy as I was, and I'm losing control of my immune system. I blame the airport and its constant noise and air pollution for this health decline.

Airport Noise Management Proposals for Toronto Island Airport

1. No engine run-ups before 8 am, or after 8 pm, except for emergency purposes.

2. No island airport commercial flights after 10 pm, as late night noise is the worst noise. Some airport neighbours are requesting that commercial flights end at 8 pm, if possible.

3. Cancel city permits for overnight construction at the Island Airport, as overnight construction wakes the neighborhood. It's unhealthy to live with loud noise all day and all night. The airport should not be allowed to make noise all day and all night long.

4. The City should consider stopping the use of Adjusted DBA Decibel measurements, and instead use Complete DBC Decibels for monitoring airport noise. DBC Decibels are a more accurate measure of noise, because DBA decibels don't measure bass noises.

Community Noise Standards for Toronto's Harbourfront Community

The goal is to keep all regular noise below 65 DBA. It has been determined that any noise above 70 DBA = 80 DBC Decibels, is a disturbing noise. When noise reaches 85 DBC Decibels, it is a serious noise problem for the neighborhood, especially when the noise is sustained, ie. with 200 flights in and out of an airport all day, every day.

Noise Comparisons With Both DBA & DBC Decibel Measurements

quiet nights	40 dba	=	45 dbc
quiet room indoors	45 dba	=	50 dbc
quiet balcony outdoors	50 dba	=	60 dbc
passing cars on a busy street	60 dba	=	70 dbc
loud television, vacuum cleaner	65 dba	=	75 dbc
loud stereo, power lawnmower	70 dba	=	80 dbc
louder bass sounds, car alarms	75 dba	=	88 dbc
loud motorcycles, garbage trucks	80 dba	=	95 dbc
live concert sound systems	85 dba	=	100 dbc
fire engines, sirens	90 dba	=	110 dbc
lightning	100 dba	=	120 dbc
airport noise, airplane flying overhead	65 dba	=	75 dbc
airplane takeoff, more bass noise	70 dba	=	82 dbc
airplane taxiing	73 dba	=	85 dbc
airplane landing (braking)	75 dba	=	88 dbc
engine maintenance run-up	77 dba	=	90 dbc

Noise Measurement Note: Adjusted DBA Decibel readings are 15-20% lower than Complete DBC Decibel readings, for the same sound, because DBA adjusted decibels do not measure bass noise. Airport ground noise is mostly bass noise. The only valid way to measure an airport's constantly roaring bass noise is with DBC Decibels.

It's also important to note that airplane industry noise readings are taken from a greater distance than the other noises on the list. With noise measurements taken closer to the plane, ie. on the runway, airplane noise readings are much higher than the TPA reports.

We recommend these Airport Noise Management Proposals, and hope Toronto City Council will adopt these Community Noise Standards for the Harbourfront.

www.harbourfrontcommunity.info

Health Impact Study

Community Profile:

- established mid 1980's
- 4 housing co-ops
- 2 large Toronto Community Housing developments
- 4 condos since the 80's
- significant population whose housing is rent geared to income or affordable housing
- most housing has one to three bedroom units - a few have four bedroom units
- few amenities – Community Centre, Schools, daycares, bookmobille on Friday night. One corner store plus a community food group linked to Foodshare
- mixed ages – many families - profile most closely resembles St Laurence area (supposedly a model of urban development)
- Little Norway Park is within the Community, Coronation Park to the west and the Music Garden to the east. Preschool water pool and playground is by the lake directly across from the airport and beside the ferry loading area. Playing fields are beside Eirean Quay

Current Situation:

- airport has expanded greatly since 2006
- traffic and parking has become intolerable situation
- parents walked the children to the school behind a large banner to ensure their safety
- area is used recreationally by many groups – in the summer there are many runs and events including extra traffic for the Carribean Festival, Fort York, Ontario Place, and the Exhibition (community understands that this use is for the benefit of Torontonians)
- regularly smell airplane fuel in the park and in some buildings and the I've been told the school
- cars picking up passengers use our streets for pick up areas. Have cars idling and blocking intersections.
- we wonder what we are currently breathing – black carbon, small and large particulate? and what is it doing to us?
- Visitors and staff at the airport regularly park on our streets which is designated short use except for parking pass holders. It is harder for them to get parking now.
- The noise is very loud at times, to the extent of having to close windows. Many do not have air conditioning.
- Some of the older buildings do not have air conditioning or sophisticated air filtration systems. We breathe the exhaust and fumes
- the preschool playground gets diesel fumes from the ferries and the vehicles loading
- there has been almost constant construction at the airport – ferry docking, new terminal s and now the tunnel. We have trucks going past the school and Community Centre regularly through the day along with double fuel tanker trucks. They create noise and pollution. It has been a constant stressor

Expansion and Jets:

- this would bring more construction to the area – not only for the runway but in all probability there would have to be an expansion of the terminal to accommodate extra security and customs
- this would bring more noise and more pollutants and risks at the crossing at Queens Quay West and Eirean Quay.

- Larger planes would bring more passengers which would make our intersections even more dangerous. The traffic often does not notice the stop signs and you only cross the street when they are stopped.
- it would bring more pollution from vehicles
- jet fuel would bring its extra pollution
- if the runway was longer would the Q400's then be able to carry more fuel and passengers and would this ad to the noise and pollution with a heavier plane.
- The community is at its wits end – the psychological stress is enormous

The City and the TPA has never communicated to us the health implications of the current situation. The continued adding of slots at the airport has continued with no acknowledgment of the community. We are people. We breathe, We raise families. Many in the community cannot afford to move to another place. Most would not want to. It is our home.
We need to know what is happening to us now and what any expansion would mean. A quick study does not address any of these issues.

To: <sgower@toronto.ca>
Date: 10/8/2013 8:41 AM
Subject: Health Consultation

Dear Ms. Gower:

I am a resident of the South Beach Marina Townhomes and recently heard news of the public consultation health impact meeting that is scheduled for this Wednesday night. As our townhomes are within 300 yards of the runway, we are surprised and outraged that the city of Toronto did not reach out to South Beach in the community here on Stadium Rd. and MOST affected by the proposed expansion plans. The airport currently affects our mental and physical health perhaps more than anyone in the community. I have heard news that other co-ops in the area have been solicited to attend the meeting, but that South Beach was left off the invitation list totally.

Would you please consider having a representative from our townhomes attend this meeting? I am happy to attend and bring information back to the South Beach residents and board. Please contact me with your decision at your earliest convenience. I have blocked the scheduled meeting times in my schedule so that I may be able to attend on this moment's notice.

Many thanks,

To: "publichealth@toronto.ca" <publichealth@toronto.ca>
Date: Friday, October 11, 2013 8:03 PM
Subject: health impact study

Dear Dr. McKeown,
Even though we participated in the health impact study regarding the request to add jets at BBTCA, we feel that the process is deeply flawed. As our area in Riverdale/Beaches is already under serious health risks, we are quite shocked that the city would make such a serious decision with only 3 weeks to do the study. The health and welfare of Toronto residents must take the utmost precedence! Enclosed is a written statement to Golder Associates. Please protect our health!
Sincerely,

Thank you for your efforts last night to obtain so much information in such a short period.
I was the representative for ward 32.
With so many knowledgeable and caring people in the room, it was frustrating to try to cram so much information into post-it notes on the board.
For the record I would like to say that 3 weeks to do a health study that will impact thousands and thousands of waterfront residents is inadequate and disrespectful to their health and well-being. This reflects badly on our Executive Council and city.

Again as a representative from the East end, I would like to stress some urgent points from Wards 30, 32, 31, and 36, the East waterfront wards. First of all, the noise consultant did not seem interested in hearing our noise complaint concerns. Residents in the Beaches and Bluffs have been greatly disturbed in the last 2 years by the increase in noise from the Q400s flying over our homes. These are old established neighbourhoods with homes atleast 100 years old and low flying Q400s are noisy and stressful! The noise is from 6:45 am to atleast 11 pm which means we do not get 8 hours sleep any longer, 7 days per week! Any increase in any type of plane is unacceptable.

More urgently, I am deeply concerned about the report by Toronto Public Health official Ronald Macfarlane from Oct. 18, 2011 for "Cumulative Air Quality Assessment" South Riverdale and the Beaches. In this study he states that substances of greatest concern are: "benzene, 1,3-butadiene, and nitrogen oxides". The conclusion: "Efforts to reduce air pollution from transportation sources continues to be a priority in the City".
This was BEFORE the Portlands Energy Centre (which releases NOx and COs) was

fully operational, and BEFORE Porter had so many flights over our area.
City Council then voted unanimously to "reduce the impacts of transportation emissions on air quality" (April 2012). Yet Porter was allowed to continue to increase the flights.
How can we even consider more pollutants when our area already has such a high asthma and cancer rate?!

The health and well-being of tens of thousands of residents MUST take precedence over the "convenience" of a few!!

Also our neighbourhoods provide much needed recreation and sense of well-being for thousands of visitors all year. In the summer, the boardwalks and parks are full with families having picnics and people arriving for much needed respite. Jets are not compatible with such an environment.

Thank you!
Sincerely,

Hal Beck is YQNA's representative in matters regarding the Island Airport. On October 16, 2013 he sent the following document, listing issues, questions and process suggestions to Golder and the Waterfront Secretariat who are conducting the City's Health Study pertaining to a Jet Expansion of the Island Airport.

Requests concerning Dec 2013 Health Study Report Contents

1. Please provide a matrix of how the potential health impacts relate to the health assessment factors. Ie. 'physical health, mental health, and well-being impacts' versus 'environmental, economic, social and cultural factors'. It is not clear.

2. Please tabulate all typical potential mitigation alternatives that could be considered for both the health impacts and health factors, and identify those that the study team focused on in the study.

3. Please provide a more fulsome list of relevant key resource documents that the study team believe are most applicable for this health study, for waterfront stakeholders to educate themselves.

4. Please provide information to the extent required by the Council Decision Items of May 7, 2013 (see attached page 2).

5. Please confirm if there are any health benefits possible for any waterfront stakeholders of introducing jet aircraft at Island Airport ie. are we only looking at a negative situation.

6. Please document specific populations reviewed and their geographic location. Per HIA Background materials, breakdown the populations based on: physical environment, social environment, income and employment considerations, genetics, and child development.

7. Please document the potential impacts to the physical health, mental

health, and well being of the public.

Health Scenarios

8. Three airport operating scenarios were presented to the public for the first time on Oct 9, 2013. These have not yet been defined for the study team or the public. Please clarify the following for each scenario:

(a) Specific horizon years assumed for each scenario
(b) Number of slots of Q400 vs CS100 for each scenario
(c) terminal building/ gate configurations, terminal building, runway capacities, hush houses, etc. assumed for each scenario (What potential outcomes of Airport Master Plan not yet completed are assumed.)
(d) ultimate airport service capacity and unused airport capacity under each scenario
(e) slot schedules assumed for each scenario, clearly showing time and concentration of arrivals and departures separately, marked at 15 minute intervals. (Increased concentrations of flight movements affect health impact intensity. Departing pax will use Eireann Quay over longer duration than arriving pax.)
(f) buffer times between runway movements assumed, including time separating the turning on of each plane engine on any part of the airport grounds
(g) flight passenger slot loading and associated boarding pass rationing assumptions for each scenario, broken down into 15 minute intervals
(h) the proportionate increase in number of heavy post maintenance runups relative to May 2012 numbers
(i) the assumed number of planes moving on the ground simultaneously, or with engines turned on at any one time prior to using the runway

Data Collection (Noise, Air, Traffic)

9. Please provide a list of all test conditions that are typically reviewed prior to commencing Data Collection, and then clearly identify those actually investigated in the report.

10. Please calculate the statistical relevancy of technical data collected.

11. Please document the exact time, duration, and method of data collection.

12. Please document proposed net increase in background pollution anticipated due to Pearson heavy rail link.

13. Please comment on extent of reduction in health impact of airport since May 2012 due to reduction in airport passengers.

Electronic Modeling (Noise, Air, Traffic)

14. Please clearly document how electronic models used under the Health Study for the Dec 2013 report were calibrated and validated.

15. Please summarize all test criteria, comparing the standards against the study findings.

Noise Health Impact Technical Work

16. Please document conditions at comparable airports with respect to residential tower proximity and ability to overlook airport ground activities from resident sleeping and living quarters. A direct line of sight is a direct line of sound.

17. Please confirm healthy number of sleeping hours for community members ie. were Signatories reasonable in agreeing to current

operating hours of airport or ferry.

18. What is maximum decibel reading at pillow elevation permissible that will ensure any community member at any age will not be woken up by airport runup, ferry, or flights.

19. Discuss dBA vs dBC measurement thresholds with respect to monitoring window rattling effects and sleep deprivation.

20. Provide a feasibility review of installing permanent web-enabled noise monitoring equipment on the outside of towers at targeted elevations.

21. Provide information with respect to emerging community noise mapping projects using smart phones, which can input into airport noise management programs.

22. Please provide information on banning car alarms from airport parking lots.

23. Provide practical advice for residents in coping with all airport related noise impacts and resulting stress from sleep deprivation eg. any dietary considerations, exercises during mid day to improve alertness at work due to airport sleep loss exhaustion.

24. Summarize all airport related noise impact considerations: flight movements on runways and in air beside towers, plane warm-ups and taxiing, ferry horn blasts, rolling luggage noise annoyance concerns, post maintenance runups, helicopter night flight noise propagation and reflection, etc.

25. Summarize order of magnitude of existing Q400 noise considerations eg. takeoff noise at bedroom windowpane ranging 75dBA, ferry noise impact during sleeping hours ranging 64 dBA at bedroom windowpane, etc

26. Please assess impact of constant roar from multiple planes warming up or rolling around simultaneous at any time of day, and impact of planes lining up at end of runway pointed toward residents in May 2012 (photos available) eg. there is sometimes a noise peak as plane turns a corner.

27. Quantify number of bedroom windowpanes which no longer meet MOE interior noise criteria of NEF=0.

28. Confirm which waterfront buildings are Class 2 vs Class 1 under MOE noise criteria. At what tower elevation or storey do residential units change from Class 1 to Class 2. (Eg. in 2002, I used to sit on bench after work beside ferry slip and hear my pulse over the faint dull white noise of Gardiner Expressway. This indicates that 34 Little Norway Crescent and adjacent park would be assessed at Class 2. Any units facing Gardiner Lakeshore would be Class 1. Please confirm for Dec 2013 report.)

29. Document the geographical range and statistical likelihood of the Actual 0 NEF Contour location. Need to look at external face of buildings as waterfront towers do not have noise protection or HVAC capable of supporting AC during summer months and are designed with large south facing bedroom windows to open 24/7 to cool lake breezes eg. takeoffs audible at Queen Street.

30. Confirm max vibration criteria to avoid wakeup from rattling windows (airborne vibration) or ferry operation (waterborne vibration transmitting to bedroom floor).

31. Provide practical guide for residents in obtaining, using and understanding noise meters and vibration meters.

32. Document ambient (ie. background) noise as it varies across the waterfront, at targeted elevations, over the 24 hour day. The ambient

noise must exclude any airport impact related noise ie. desirably excludes ferry conveyance system so that full cumulative impact of airport operation can be understood.

33. Please quantify modeled data for Leq (1), Leq (8), so that City can actually look at the noise impacts (not as shown in workshop presentation). Also need to breakout Leq (evening) for MOE Class 2 areas so that City can evaluate appropriateness of as-constructed waterfront building materials to withstand airport noise.

34. Document in report that residents currently do not have possibility of 8 hours of sleep due to approved slot schedule, curfew violations, helicopter movements, airport maintenance construction activities during sleeping hours, and ferry operation and testing schedule (which only guarantees 3.75 hours quiet prior to commencement of ferry testing at 4am).

35. Please include graphs and clearly document in Dec 2013 report the relationship between passenger loading, fuel weight by destination, and the resulting noise impact at various tower elevations. An example comparison table, including the current typically empty new flight runs, would be helpful.

36. Please assess the volume of noise pollution which is not benefitting anyone eg. a noise event assumed for Q400 flying into Toronto with 10 people and departing with 20 people. The value of each unit of noise pollution supporting the under-capacity Q400, affecting all waterfront stakeholders, is low. This information will assist in establishing noise efficiency benchmarks for noise impact vs slot count.

Air Pollution Health Impact Technical Work

37. Please document assumptions with respect to recovery timeline of US

Mid-West, which is the primary source of Toronto air pollution.

38. Please obtain samples of film forming on area yachts and balconies to confirm human safety for children's toys, and also cleaning requirements for external brickwork and various HVAC systems.

39. Please document health and safety issues related to the transportation and handling of various fuels.

40. Please provide a simulation of the anticipated impact on surrounding residential towers and areas should there be a massive aircraft fuel explosion (of a truck, an underground tank, an aircraft or any combination thereof) for each Health scenario eg. which tower windows will implode with air pressure from blast.

41. Please document meteorological statistics for airport, including applicable stats relevant to health impacts. For example:

(a) Wind direction re plumes
(b) Wind speed re distance
(c) Updrafts on water surface
(d) Barometric high/low pressure
(e) Temperature
(f) Calm reflective water surface

Traffic Health Impact Technical Work

42. Please set up stakeholder meeting to discuss Transportation Study immediately. The Transportation Study has not yet been completed or issued, and is critical in completing the Health Study.

43. Please provide summer grid lock operating assumptions, and discuss

ambulance access to Little Norway Crescent.

44. Further to the above comments regarding the 3 Health Scenarios presented Oct 9, 2013, please clarify the following for each scenario:

(a) Passenger modal split breakdown
(b) Number of employment trips to and from airport including modal split
(c) Total trips in each direction on each leg of Bathurst/ Queens Quay intersection.
(d) Assumed volumes of idling on Lakeshore boulevard caused by increased southbound movements with trip ends at airport.
(e) Assumed volumes of taxis idling on Eireann Quay.
(f) Assumed circling passenger traffic looking for airport parking and effects of idling traffic inside Bathurst Quay eg. south end of Little Norway Crescent
(g) Assumed number of employee parking trips and location of parking.
(h) Maximum number of trips assumed on east leg of Bathurst/ Queens Quay intersection, including modal split, in conformance with Queens Quay Revitalization EA Study document and appendices.
(i) Assumptions for additional circling tourist traffic at Bathurst/ Queens Quay intersection destined for Ripley Aquarium (traffic not considered under Queens Quay Revitalization).
(j) Road and transit infrastructure assumed for each scenario eg. post-Queens Quay Revitalization road capacity, transportation network configuration, and transit service frequency and capacity assumptions

Report Disclaimers

45. Please issue each report with professional seal eg. engineer's stamp, signed and dated.

46. Please label each report 'Very Preliminary Draft'.

47. Please include a statement on the introductory page of the Dec 2013 report in large bold font size which states: "Work covered by this document was commenced in October 2013 to meet a November 2013 report deadline, established by Council in advance of a December 2013 Council vote on whether CS100 jets should be approved at the Island Airport. This report deadline does not allow for some standard project protocols to be carried out. Some fundamental engineering practices were either partially completed or otherwise not carried out in order to meet the deadline established for the study team. Some of the technical information presented herein may not be legally supportable under 'balance of probabilities' testing and/or under 'fair and reasonable' testing. "

48. Immediately following the above, please include any disclaimers which Golder needs to insert in order to protect themselves corporately, keeping the onus of responsibility for the report contents and findings solely with the City of Toronto. Please also include in the report all disclaimers which Golder felt compelled to include in their approved professional services proposal.

49. Please explicitly state on the introductory page of the report that the contents, opinions, and findings of the Dec 2013 report are exclusively those of the City of Toronto.

50. Please include in the report the typical flowchart showing study steps, and identify the steps where shortcuts in methodology or process was necessary in order to meet the unrealistic Council deadline for Dec 2013.

Hal Beck

To: <sgower@toronto.ca>
Date: Friday, October 11, 2013 11:54 PM
Subject: NoJets

Dear Ms. Gower,

I am a resident of downtown Toronto, and have been my entire life. I am currently very concerned with the possibly of the Billy Bishop Airport adding jets to their business.

I suffer from a number of health problems as a result of living in the city, such as asthma, fatigue, various skin problems, and compromised hearing. All of these issues are quick to improve when I take some time outside the city, and even quicker to return when I come back home.

I implore you to consider the effects of adding more jets to an already intensely polluted city. The air quality, according to the findings of the NoJets campaign, is incredibly poor and we are doing almost nothing to rectify the problem. Many large cities, especially in Europe and the UK are rewarding their citizens for greener practices, recognizing that our love of instant gratification and lack of global awareness is steadily digging us into a hole from which we cannot return.

I wish to live in a city that is concerned with implementing sustainable living models and supporting our health. Instead I am finding myself increasingly in a city rife with compromised health due to environment, increasing its consumption of fossil fuels, and destroying natural wildlife habitats.

Please, for the health of your citizens and the sustainability of this city, deny the Billy Bishop request to add jets to their airport. One airport with jets is enough.

Sincerely,

Canadian Association of Physicians for the Environment

Dr. David McKeown
Medical Officer of Health
Toronto Public Health
277 Victoria St., 5th Floor
Toronto ON M5B 1W2

October 23, 2013

Re: BBTCA Health Impact Assessment Air Modeling Study

Dear Dr. McKeown,

I hope you are well. On behalf of the 6,000 members of the Canadian Association of Physicians for the Environment, I am writing to you to urge you to undertake an empirical study of the health impacts of expansion of Billy Bishop Toronto City Airport.

Of particular concern to our organization is the impact on human health of increased air pollution that will result from the expansion. The Toronto waterfront residential community is growing rapidly and thousands of people visit the area each year. With major rail and vehicular routes to the north and the island airport to the south, the Bathurst Quay community may carry a unique burden of exposure and further expansion of Billy Bishop may compound community health risks.

Models estimating future air quality impacts of airport expansion must be built on a baseline of sampled data. We urge you to complete a proper empirical study of the impact of this proposal on air quality in surrounding communities given the potential health consequences for tens of thousands of residents and visitors. An informed decision cannot be made without this information and those impacted have a right to know what they are breathing.

Sincerely,

Gideon Forman
Executive Director

130 Spadina Avenue, Suite 301 Toronto, ON M5V 2L4
Tel: 416-306-2273 Fax: 416-960-9392 www.cape.ca

Subject: FW: Submission to HIA Island Airport Jet Proposal

>>> 10/12/13 2:05 PM >>>
I would like to voice my concern at the proposed introduction of jets at the Island Airport.
This would lead to significantly more air traffic,more pollution of air and water and more congestion in the Bathhurst/Queen's Quay neighbourhood.
Recent studies in Europe have noted the serious negative health impacts of living in the vicinity of an airport. Noise pollution also can adversely affect one's health.
I find even the present level of air traffic unacceptable. The air quality in downtown Toronto is poor enough. We should be looking at ways to improve air quality, not make it worse, which is what will happen if jets are allowed.

Than you.

Sent: Friday, October 04, 2013 7:35 AM
To: Stephanie Gower
Cc: Christopher Dunn; Papageorgiou, Agni; Carly Bowman; Carol Mee; Fiona Chapman; Helen Coombs
Subject: Re: Concerns with "stakeholder" HIA meeting

Dr Gower,

Thank you for the prompt and detailed response. I think it will help dispel some of the concerns shared by our supporters.

Regards,

On Oct 3, 2013, at 5:12 PM, "Stephanie Gower" <sgower@toronto.ca> wrote:

> Dear ,
>
> Thank you for your interest in the Health Impact Assessment that is being conducted to explore the potential impacts of expanding service at Billy Bishop Airport. I have tried to answer your questions below and also provided some background about the process of Health Impact Assessment, in case it is helpful.
>
> **What is Health Impact Assessment?**
>
> HIA is a well-defined process that has been documented by organizations such as the World Health Organization. It is based on the understanding that a person's health is determined by a wide range of factors including their physical environment, their social environment, their income and employment considerations, their genetics, healthy child development, and others.
>
> HIA looks at the decision being proposed (in this case, whether the airport should be permitted to expand) to identify if making that choice will affect any of these factors. For any of these factors that are affected, the HIA should describe what this means for the health of the population. An important part of HIA is to identify whether there are any specific groups of people who might be more vulnerable than others.
>
> **Has Golder done other HIAs for the City, and how were they chosen?**
>
> Golder worked with Toronto Public Health on a HIA of biosolids management options at the Highland Creek Treatment Plant. If you would like to see how the process was applied in that case please see http://www.toronto.ca/legdocs/mmis/2011/pw/bgrd/backgroundfile-37363.pdf. Golder also worked with the Toronto Environment Office and Toronto Public Health on the cumulative air quality study carried out for South Riverdale, Leslieville, and the Beaches (Please see http://www.toronto.ca/teo/local-air-quality-studies-riverdale.htm). Their previous experience on these two projects was a key reason they were hired for the HIA.
>
> **Why was the public not invited to the health impact assessment workshop?**
> **Why is the invitation list limited?**
> **Who are the invitees and what criteria were they chosen by?**
>
> The focussed workshop being planned by Toronto Public Health is to gather community and public health experts to explore and document the health concerns related to the proposed airport expansion. This includes discussion of concerns raised during the public consultations that were organized by the City of

Toronto. Health-related concerns that were raised during those public consultations were documented and will be considered in the Health Impact Assessment.

The number of participants at this workshop is limited in an effort to balance representation from a range of community and public health organizations with creating an opportunity for focussed and detailed discussions to explore the issues that the communities and public health experts are concerned about.

The invitees were selected based several sources including suggestions from public health staff who work in the communities near the airport, contacting local councillors for suggestions about who to include, identifying public health and noise experts at area universities, identifying environmental health organizations in Toronto, and reviewing the stakeholder list that was developed to support the City's public consultation.

Can additional people attend the meeting?
The number of participants is limited to ensure a productive discussion that enables all participant views to be expressed and explored. At this time, we have reached full capacity for the workshop.

How can I provide input?

- Toronto Public Health will consider all written submission received by October 16 as input to the HIA.
- There is still an opportunity to provide input through the City's consultation website at http://cityoftoronto.fluidsurveys.com/s/BBTCA/; any health concerns raised in the survey will be considered within the HIA (Survey closes October 11)
- Toronto Public Health will participate in the public consultations that are planned for November and being coordinated by the City Manager's Office
- Once the findings of the Health Impact Assessment are released, there will be opportunities to depute at Executive Committee (December 5) or the Board of Health (December 9). To speak at the Board of Health meeting or to submit comments to the Board of Health in writing, please email boh@toronto.ca. For deputations or written submissions to Executive Committee, please email exc@toronto.ca.

When will the study results be available?
The proceedings of the workshop will be documented in a report that will be made publicly available by the end of November.

regards,

Stephanie

_____
Stephanie Gower, PhD
Research Consultant
Healthy Public Policy
Toronto Public Health
277 Victoria St, 7th Floor
Toronto, Ontario, Canada, M5B 1W2

__
Tel: (416) 338-8101
Email: sgower@toronto.ca

>>> 10/3/2013 4:47 pm >>>
Thanks Chris,

Dr. Gower, the concerns I list below are being presented to me on a daily basis.

As you may have gauged during the townhall meeting, the general populace is disappointed with the rushed process so far. Comments such as "we were only asked to look at benefits" for the economic study have further fueled the fire of distrust.

Thank you for entertaining and addressing the concerns listed below. I would love to convey your response to our supporters and help calm them down.

On Oct 3, 2013, at 2:02 PM, "Christopher Dunn" <cdunn@toronto.ca> wrote:

,

Toronto Public Health staff are coordinating the HIA. I have copied Stephanie Gower on this email who can answer most of your questions. In terms of the November consultation meeting, we have not scheduled a date and are still looking for a venue that can accommodate the anticipate number of attendees.

-Chris

Christopher J. Dunn
Waterfront Secretariat / City of Toronto

Tel: (416) 395-1211
Cell: (416) 797-7802
Email: cdunn@toronto.ca
Web: www.toronto.ca/waterfront/

>>> 10/3/2013 1:40 PM >>>
Hi Chris,

Hope all is well.

I am hearing quite a few concerns about the HIA. An example of the type of emails I am getting is below.

Can you please help me answer the following questions
1) has Golder done other HIAs for the city. What was their selection criteria. Their website highlights their expertise as engineers but not as Health experts.
2) who has decided that this meeting will be limited to the invited list and who has defined the list. This tactic is limiting for all stakeholders who have concerns.
3) Why is the invite limited to one rep per organization? Once again this tactic is being received as deliberately limiting .
4) I cannot attend the meeting due to the new "rules" for the "stakeholder" meeting. How do I get on the list?
5) I know there is a townhall scheduled for November. Will there be a public

consultation for the HIA in advance of the townhall?

As you know Torontonians have been quite vocal about their concerns with this study and the process. Why would the city staff further hurt its relationship with the community by implementing these tactics?

I look forward to your timely response as the deadline to sign up for this meeting is tomorrow.

Thanks,

>
> Does anyone know what criteria were used to decide WHAT or WHO constitutes a stakeholder or a neighbourhood in this little exercise ? I've asked Tom Davidson at Cllr. McConnell's office who they are sending from my ward, since Cllr. McMahon has sent someone. I've tried to find out who is being sent from the GWNA. One GWNA person tells me we should leave it up to the medical experts. Not sure I heard that right, but apparently the WDLC (not a neighbourhood) is being represented. Is there a list somewhere ?
>
> I first heard about it from Gwen Fogel, and she asked people to sign on, so I understood that it was a true public consultation. And believe me, I have tried. Tom Davidson, from Cllr. McConnell's office informs me that it is NOT really a public consultation.
>
> So, will someone please tell me, what in hell it actually is, and what rationale there is for this patchwork of interested parties, whom I cannot call stakeholders. Should I be trying to attend or should I not give a rat's ass because it's all the same old, same old, smoke and mirrors ?
>

ARCADIA HOUSING CO-OPERATIVE INC.
680 QUEENS QUAY WEST, TORONTO, ON M5V 2Y9 416-260-6611

October 11, 2013
Comments on the Effects of Expansion and Use of Jets at the Island Airport

To: Chris Dunn, Project Manager wps@toronto.ca and cdunn@toronto.ca
Stephanie Gower, Department of Public Health sgower@toronto.ca

Arcadia Housing Co-op is a community of 215 people, located about 360 metres from the Island Airport. Arcadia has been providing affordable housing for 27 years, since it was built on city-owned former industrial land, as part of Toronto's residential and recreational renewal of its central waterfront. Arcadia has always been a stable community, with very few move-outs.

Arcadia Co-op worries that any further expansion of the airport and any breach of the Tripartite Agreement will have a negative health impact on our community. Already we are concerned about the safety of our children crossing the street to the Waterfront School and Harbourfront Community Centre, where airport fuel trucks, buses, taxis, limousines and cars pass in front of them.

We worry further about the airport noise that interferes with our sleep and that of our children, which makes their concentrating at school more difficult.

We worry about contaminants in the air in the vicinity of the school, adjoining community centre, Little Norway Park, and at home. Of the twenty-eight adults who live on the top floor of our co-op, five have been diagnosed with cancer. That is a disturbing cluster of disease. We worry further about the health effects of the airport on our other vulnerable residents, the seniors and people who have disabilities and lung conditions.

Already some residents who have lived in Arcadia since its beginning are moving away because they can no longer tolerate the airport noise, traffic and pollution.

If the airport is allowed to expand and if jet airplanes are allowed to fly from the island, those Arcadia residents who are able to move away increasingly will do so. Accelerating move-outs could cause devastating vacancy losses for our co-op, which could then cease to exist as a co-op, removing 110 units of affordable housing from Toronto's downtown. This prospect sounds extreme, but our national Co-operative Housing Federation warns that it a very real danger for co-ops. In that case, airport expansion could provide the "tipping point" for the co-op's demise.

If the airport expands and the four co-ops on Bathurst Quay experience serious vacancy losses and cease to exist as co-ops, a total of 340 affordable downtown housing units will be lost to our city. In this case reality and fear of negative health impacts from the airport expansion would cause serious negative economic impacts.

Sincerely,
Dennis Bryant
Dennis Bryant
Corporate Secretary
for the Board of Directors
Arcadia Housing Co-operative Inc.

To: <sgower@toronto.ca>
Date: Friday, October 11, 2013 8:42 PM
Subject: Submission to HIA Island Airport Jet Proposal

The amount of air traffic is amazing - please come down and sit by the water and see for yourself - the sound, the smell.
It is offensive to the senses. Toronto has an amazing downtown - unlike other cities people 'live' downtown. Therefore more safeguards needs to be put in for all types of pollution.
Please come down and stand outside the intersection of Bathurst and Queens Quay and see taxis four deep in the road all running their engines (especially in winter and hot summer days) This is in front of a schoolyard! It's not rocket science. It is clear there pollution - long term affects on the children and the people who 'live' in that area are palpable.
You can feel the grime across handrails, sidewalks in the vicinity there. I daren't put anything outside as it immediately picks up dirt.

What will happen if they are allowed to dredge up the bottom of lake Ontario - a moderating factor in pollution and start fooling around with currents and water and air flow.

To: <sgower@toronto.ca>
Date: Thursday, October 17, 2013 9:01 AM
Subject: Fwd: [NoJetsTO] Just sayin

>

Toby Lake posted in NoJetsTO

Tol Lak **Toby Lake** 8:53am Oct 17

Just sayin

WHO agency: Air pollution causes cancer
globalnews.ca

What many commuters choking on smog have long suspected has finally been scientifically validated: a...

View Post on Facebook · Edit Email Settings · Reply to this email to add a comment.

Subject: FW: Island airport

>>> 10/16/13 2:47 PM >>>
Ms S. Gower,

Although I have no written or photographic proof, I want to say that there are middle of the night flights going past my house. It could be at 1am, 3am or 5am. I note the time but do not get up to record it.

Last night included: 3am.

Around 10 pm on Sunday night of this long weekend between 9.30 to 10pm, the planes landed on average every five minutes, sometimes every two minutes.

This is to show you no matter what Porter says, there are more flights than he says there are, and he breaks the no-fly rule for the middle of the night. They can't all be 'medical' flights which is what they say when asked.

File this under Noise Pollution. And we all know the scienfic studies that show detrimental results of sleep interruption on people.

All you have to do is imagine this amount, this many flights, landing near YOUR house. Imagine you been in this house a lot longer than Porter has been around. Imagine an airport being built in YOUR historical neighbourhood, with all its noise, all the pollution from jet fumes, and the danger level of huge amounts of fuel being trucked in tanker trucks through YOUR streets, near the schools... every single day.
Imagine it is your neighbourhood.

Porter is lucky to have the planes he has.
Giant jets must go to Pearson, away from our waterfront neighbourhoods.

Thank you.

Toronto

Sent: Wednesday, October 16, 2013 2:42 PM
To: sgower@toronto.ca
Subject: Submission to HIA Island Airport Jet Proposal

Air quality is my primary concern.

To: <sgower@toronto.ca>
Date: Wednesday, October 16, 2013 4:22 PM
Subject: Health concerns re: Toronto Island Airport

Dear Ms. Gower,
I'm writing to express concerns regarding health effects from the Toronto Island Airport, and the impact any possible expansion of this airport would have on the health of waterfront community residents and the city of Toronto as a whole.

I live directly across from the airport, at Bathurst and Fleet Street, since 2008. The current activity level of the airport has already had profoundly negative effects on the community at the foot of Bathurst Street and on the surrounding waterfront.
As someone who works out of my home, noise from the airport is a constant intrusion on my daily life. I am awoken by engine run-ups and take-offs, I hear frequent take-offs and landings throughout the day which force me to close my windows and work with headphones on in my apartment. I also regularly hear gunshots from flare guns and other types of guns, which presumably are used to scare off the birds, so the birds don't interfere with airport activity. I am quite sure this constant barrage of noise has negative effects on my health and well-being as a resident.
I also have concerns about the safety of introducing jet aircraft to a sensitive area with a bird sanctuary and abundant lakeshore bird habitats such as Tommy Thompson Park. It is well known that jet aircraft are more susceptible to bird strikes than the turboprops that are currently flown at the airport, as large birds such as waterfowl can be sucked into the jet engines and cause severe damage and even disable aircraft engines on take-off, as was seen with the "Miracle on the Hudson" crash in New York a few years ago. The prospect of flying jets out of an airport with a large waterfowl population, right beside a densely populated downtown community, is a recipe for disaster. I believe banning jets was put in place in the Tripartite Agreement to prevent this kind of safety hazard in our downtown community. Residents' safety should be the number one concern, and jets should not be allowed at this location.
On a daily basis, I also see parents and children of the waterfront school contend with growing traffic problems that the airport has caused, problems that have only been addressed with band-aid solutions. Just to get to school, these children must cross an intersection that is constantly overflowing with impatient taxi drivers, passenger cars, fuel trucks and dump trucks (due to construction). The school's playground is also now bordered by a busy taxi waiting area, where taxis idle all day long from morning until night. This same heavy traffic also intersects and interferes with cyclists, joggers and pedestrians on a well-used recreational area on the waterfront, Martin Goodman Trail. The ill health effects of increased idling, passenger and truck traffic is not good for children or residents using the recreational trails.

These factors from the airport as it currently exists have already had negative impacts on the health of our community. Expanding the airport would double these effects on the community. That does not even address such effects as possible increased cancer rates due to black carbon exhaust from jet engines. I am not well-versed enough to address those concerns, but I know there are documented studies covering these issues. Attached is an article regarding the ill effects a small airport with jet

aircraft can have on a community.
The expansion Porter is proposing will turn the small Toronto Island Airport into a major hub of jet aircraft transportation, as they will not be able to maintain a monopoly on that airport and other larger carriers will want to fly out of that airport as well. This can only mean our waterfront communities will suffer greatly as a result, from ill health effects due to jet exhaust, traffic congestion and constant noise. There is also concern of our drinking water becoming contaminated from the leakage of jet fuel and de-icing fluid into Lake Ontario harbour.
This letter does not being to address further potential disasters that could arise, like a jet fuel spills with increased tanker truck activity to the airport, probability of accidents from heavily increased traffic, and the worst potential disaster of all, a plane crash beside a densely populated downtown community.

Toronto's waterfront is not just a residential community, but also a well-used recreational area for all residents and visitors to the city to enjoy and seek health benefits. This potential expansion would have profoundly negative effects, not just on the surrounding community, but on the health of our city as a whole.

I urge you to consider all negative health impacts of the current airport and its proposed expansion on Toronto's waterfront community, and on the city as a whole, and put the health of residents first. Please advise Toronto City Council to reject any further expansion of this airport, due to negative health impacts on residents of the community and the city. Thank you.

Sincerely,

http://health.usnews.com/health-news/managing-your-healthcare/environment/articles/2009/12/04/smaller-airports-may-endanger-health

Subject: FW: Submission to HIA Island Airport Jet Proposal

>>> 10/13/13 11:26 AM >>>
To Stephanie Gower

I want to add my voice to the thousands of people, both residents and non-residents of Toronto, who are vehemently opposed to the expansion of Billy Bishop airport and the addition of jet planes to the service there.

After feeling excitement about the renovations under way for the revitalization of the waterfront along Queen's Quay, I am appalled that jet service is even being considered. The inclusion of jet planes at the island airport makes no sense when Pearson Airport is finally being connected to the city by rail.

The consequences for the environment will be unacceptable and to pretend otherwise is irresponsible and disingenuous.

Please put sound environmental values for both people and marine life above questionable economic motives.

Thank you

Subject: FW: No to Jets

>>> 10/11/13 8:08 PM >>>
To Ms Gower

I strongly oppose jets at Toronto's waterfront.
Not only would it be disastrous for the people who live close to the waterfront, an expansion of the current airport would be a health hazard, increase pollution (we already are steeped in pollution from cars, businesses etc.) Noise would be increased despite what we have been told.
Airports should be away from the downtown of Toronto.
Put it out at Pearson where it belongs.

Thank you,
Sincerely,

Sent from my iPad

Subject: FW: health impact BBTCA
Attachments: Background Information for HIA Workshop.pdf

>>> 15/10/2013 12:16 PM >>>

Dear Stephanie

Your address is posted on Facebook so I am taking the time to write to you about the health impacts of expanding the Billy Bishop airport.

I became involved with the issues surrounding that airport when I became the chair of the parent council for City School, which is located a stone's throw from the airport delivery and passenger access, parking, taxi corralling and private car pickup. I was horrified at the lack of consultation by the Toronto Port Authority in its goals of creating enhanced airport operations. I joined in the voices heard, brought the TDSB on board and subsequently the TPA had to grin and bear some studies and options that they should have recommended themselves. They fired their communications person, despite their apparent lack of direction in ascertaining stakeholder engagement.

Near the BBTCA, the convergence of cars and trucks, the Gardiner and the airport have created a very toxic environment on what should be a pleasant and breezy lakefront. When meeting with superintendents from the TDSB I inquired about running testing to ascertain asthma levels in the children in the two schools and daycare in the Harbourfront Community Centre building. I was told that it would be difficult to create a control situation to compare these schools to others (and I suspected that the TDSB lacked funding for such studies).

My son lives at Bathurst and Fleet St, and his local vet has told him that in his years of practice, he has never seen such high incidents of asthma is pets. Again it would be difficult to run studies on potential findings to reveal issue indicative of living near such air toxins generated by transportation of all kinds.

I think we can assume that because of existing conditions, the location of the BBTCA creates an additional load of air quality toxins. We can also assume that increasing this load should not happen if we value the people and animals who live and work in that area.

Personal convenience and a lack of proper infrastructure (ie transit) updates create a fertile ground for success by Porter. For those who would prefer not to spend time getting to Pearson Airport, Porter has capitalized on weaknesses in poor planning, and created a brand that seems hip and urban.

Porter should not be permitted to add their corporate agenda to create additional planning overload, and associated toxins resulting from their ambitions. Should jets be added to the airplanes allowed at the BBTCA, greater issues in the form of vehicles for deliveries, more cars and taxis, more trucks, as well as the obvious jets, will result in further dumping of air quality additives for all of us to deal with. We will all bear the healthcare costs inherent to respiratory problems. Porter will make profits, the Toronto Port Authority will continue to make profits that will not be used locally, and Toronto will be taxed with further problems regarding its population.

The Lake is for all of us, not for corporate pleasure and one individual's potential to create a business that he will sell, and leave the mess behind.

There are myriads of studies regarding living near airport. Please consult them, and provide a properly researched and objective analysis. It is your duty.

Sincerely

To: "sgower@toronto.ca" <sgower@toronto.ca>
Date: 10/11/2013 10:02 PM
Subject: Submission to HIA Island Airport Jet Proposal

Hello,

Im a waterfront resident and I am strongly apposed to the jets addition to the airport.

Sent from my iPhone

To: Stephanie Gower <sgower@toronto.ca>
Date: Thursday, October 10, 2013 3:09 PM
Subject: Re: Health Impact Assessment
CC: "Ronald (Public Health) Macfarlane" <rmacfar3@toronto.ca>

Dear Ms Gower,

Thank you for your email and please accept my apologies in taking so long in responding.

Please let me register my concern with the approach Golder is taking.

The 2011 Riverdale et al study, http://www.toronto.ca/teo/local-air-quality-studies-riverdale.htm states that modelling techniques were used for the study.

The major concern is that modelling was chosen over monitoring.

In touting modelling, Golder says, “There are many approaches to modeling, and each approach has its own strengths and weaknesses. Using a combination of different models or, even better, combining modeling with other assessment techniques, significantly improves the reliability of a modelling based analysis system.” However, Golder uses only the CALPUFF modelling system. A meteorological modelling system was used to simulate weather data. I see two modelling systems but no mention of assessment techniques.

The problem that I have is that the whole exercise (modelling) will be a simulation.

As Golder says, air-monitoring stations are the benchmark. Regardless,Golder will not be using air-monitoring stations for the Board of Health BBTCA study. Golder will be using receptor points which are based on assumption.

Furthermore, while Golder notes, “Modelling can identify local issues that distant monitoring cannot, or even local monitoring in the study area may not - **unless immediately adjacent to such issue sources**.” (e*mphasis added*), it is precisely the area adjacent to the airport sources that needs to be monitored to assure people living in the area and children who go to school there understand what they are breathing in on a daily basis.

I believe this must be the point of the exercise.

To further emphasize, please consider these shortcomings in the Riverdale modelling exercise. The report states,

> “There are only four "full" (and "real") Ministry of Environment air quality index monitoring stations (MOE AQ stations) within Toronto and none of these are within the local study area. Environment Canada also maintains monitoring stations (EC NAPS AQ stations) equipment to measure local air quality. The air quality model created for

> the present study establishes some 550 “virtual monitoring stations” with in the SRLB area as well as over a thousand beyond the local study area. The closest of these to MOE and EC AQ stations are used to "judge" the ability of the air quality model to properly represent the contaminant concentrations over Toronto and by inference within the SRLB local neighbourhood study area as well.” Underlining added.

Surely monitoring the air quality of an area immediately adjacent to the airport can provide better data than a judgement or an inference.

To further bring into question the accuracy of the data, consider that Golder used 2002 U.S. emissions inventory for a 2011 study, recommending they be upgraded when the 2006 data are released. The 2006 data would still be five years out of date for the 2011 study. Compare that to the immediacy of an air- monitoring study.

As well, the following does not engender confidence.

> “The model **over- predicted** Nox levels and **underpredicted** PM2.5 levels. This **is likely** because of the lack of chemistry in the model to convert NOx to atmospheric aerosols from long-range transport of emissions from well outside the City of Toronto. **If** this model had included atmospheric chemistry reactions, the Nox contribution from transboundary sources would be reduced while the particulate matter (PM2.5) would be increased, but not proportionately.” *Emphasis added.*

This does not sound like empirically-based science. Nevertheless, from your email, it is clear that modelling is what the Board of Health will settle for.

It seems to me that the residents around the airport and the children who attend school or daycare there deserve better. To get a true empirically based assessment of the air quality they are subject to, I urge the Board to direct Golder to employ air-monitoring equipment.

Thank you.

On Wednesday, October 9, 2013 10:50:01 AM, Stephanie Gower <sgower@toronto.ca> wrote:

> Dear ,
>
> On behalf of Toronto Public Health, thank you for taking the time to prepare and make a written submission. The links will be suitable for us - we can review the content of

each as part of your submission.

In case it is helpful, I am providing some background about the scope of air component that is planned for the HIA:

Golder will be conducting air modelling for the area around the airport, with the goal of creating maps that show how the concentrations of various pollutants vary over space. In this way we will be able to see the concentrations at any location we choose. Golder will model 30 air pollutants that were previously identified as being priorities for the City of Toronto. We anticipate that the process will be similar to the local air quality study that Toronto Public Health and the Toronto Environment Office carried out for the South Riverdale, Leslieville, and Beaches area (see http://www.toronto.ca/teo/local-air-quality-studies-riverdale.htm). As you will see in that study, the concentrations were compared to both provincial air quality standards and health benchmarks.

We will be sure to consider all the information you provided in your email.

Regards,

Stephanie

>>> 08/10/2013 5:42 PM >>>
Dear Ms Gower,

Please consider the attached as my submission to be included for the City's BBTCA review for the Toronto Board of Health's Health Assessment Impact.

The document contains a number of links to CommunityAIR blog postings on the question of air quality and the airport. Please advise whether the links will suffice or if I should include the original of each article as part of this submission.

Your advice is most appreciated.

Thank you.

Health Impact Assessment

As part of its review of Porter Airlines' expansion plans, a September 10 Staff Report to the City's Executive Committee stated that the City,

> "Consulted with Toronto Public Health on health effects associated with jet-powered aircraft operations at BBTCA (specifically human health effects, noise and air quality issues) and developed a scope of work for the completion of a Health Impact Assessment for the status quo and expansion of the airport."

To complete the Health Impact Assessment, the City has retained Golder Associates Ltd. Golder Associates Ltd., in turn, has sent out invitations for a public consultation to be held at Metro Hall, 55 John Street, Room 304 on October 9 at 6 p.m.

Over the summer, this blog posted a series of articles[1] on issues concerning air quality. The articles lead to several conclusions, the most immediate of which is the need to collect actual air samples in and around the airport.

In addition, Golder Associates Ltd., in its Health Impact Assessment, may wish to consider the following suggestions.

- Identify several key locations for sample collection and analysis: residences closest to the Western Gap at both ends of Runway 08-26; the centre of Little Norway Park; school grounds at Eireann Quay and Queen's Quay; Hanlan's Point downwind from the airport; Bathurst St. north of the Gardiner.

- Collect samples under a variety of wind directions.

- Analyze samples for all noxious emissions, specifically lead and inhalable particulate matter, to establish benchmarks.

- Measure findings against provincial air quality standards.

- Determine health risks based on benchmark findings.

- Base any expansion estimates of actual ICAO accepted CS100 emissions.

[1] http://blog.communityair.org/2013/07/15/the-air-they-breathe---part-1.aspx
http://blog.communityair.org/2013/07/17/the-air-they-breathe---part-2.aspx
http://blog.communityair.org/2013/07/19/the-air-they-breathe--part-3.aspx
http://blog.communityair.org/2013/07/22/the-air-they-breathe--part-4.aspx
http://blog.communityair.org/2013/07/30/the-air-they-breathe--part-5.aspx

Subject: FW: BBTCA-Health and Safety Risks To Residents

>>> 10/16/13 4:15 PM >>>

There are three specific areas of high-risk and concern that directly and indirectly impact on the health and safety of residents impacted by the Island airport (this includes the Central Waterfront).

First, the transportation of large quantities of dangerous aviation fuel through densely populated high-rise residential neighborhoods. We are given to understand that the proposed CS100 jets will each have a fuel tank capacity of about 13,785 litres, twice that of the Bombardier Q400 at about 6,526.

This means that about 12 to 15 tankers per/day driving through congested traffic corridors, past schools, a community hall, etc.

Only 48 hours ago, a tanker was involved in a major accident in Burlington.

A few months ago, we had the tragic Lac Magnetic. Following that incident, the Ministry of Transport issued (or promised to do so) new directives regarding the transportation of dangerous goods through urban areas. How will the new legislation affect the proposal to expand the Island Airport?

Second, we understand that the aviation industry uses a large number of hazardous chemical materials in the maintenance and operation of aircraft, and in airport operations, such as de-icing, etc. There have been recurrent rumours about the inadequacy of the supporting infrastructure, to prevent contamination of the Lake in the vicinity of the airport, and of the poor supervision of operating procedures in the handling of hazardous materials. (Recently, it was reported by striking ground staff of Porter airlines, that such materials were being handled on an ad-hoc basis, using plastic buckets, and inadequate protective gear.) What increased risks of water-contamination and workplace accidents, are we likely to face, given that the TPA has not shown itself to be particularly credible and transparent, in its information sharing with the community, in other areas?

Thirdly, the opening of the Island airport to international aviation, and the proposal to increase links with USA destinations, substantially increases the City's exposure to international terrorism. The proximity of the airport to the City center and high-rise condos, conjures all manner of nightmarish scenarios. Given its island geography and proximity to the mainland, why would the City wish to go out of it's way to add to the already high stress levels of the impacted population. Surely, Pearson Airport is already well prepared to handle such situations and has real and ready access to all emergency services and access to City-wide Service responses?

The Island Airport presents a very severe risk when it comes to having timely access to emergency services, even for routine operations.

It seems that Porter Airlines can flourish at Pearson, without placing thousands of innocent persons at risk.

We look forward to your
detailed Report on Health and Safety.

Subject: FW: Toronto Island Airport

>>> 10/15/13 7:25 PM >>>
Dear Stephanie:

I'm writing to register my extreme concern about the potential expansion of the island airport to include jets. The waterfront and Toronto Island are precious jewels in Toronto--a bountiful opportunity for all Torontonians of all walks of life to enjoy. Extending runways to accomodate jets will only increase noise pollution, damage an already fragile eco system and carry the potential for serious environmental hazards.

As a guardian of our helat, I urge you to ensure that Toronto Public Health remain faithful to is mission of reducing health hazards and improving the health of all of us, which clearly involves rejecting the possibility of the airport expansion in perpetuity.

To: "sgower@toronto.ca" <sgower@toronto.ca>
Date: 10/12/2013 1:31 AM
Subject: Submission to HIA Island Airport Jet Proposal

I cannot think of more ludicrous situation than the one that has been imposed upon our city by the owner of Porter Air.

It is hard to imagine that any forward thinking modern city would allow such a proposal to assault its own residents and visitors with the noise, pollution, and environmental damage that would clearly result from the Porter plans.

Here we are investing millions in Harbourfront Toronto's excellent plans to redevelop the waterfront to make it a pedestrian and tourist attraction. Yet at the same time the city is led by a Mayor who would allow Porter to irreparably harm the entire waterfront. It is unbelievable.

Please add my voice to the many who have already expressed their outrage with this terrible proposal to destroy one of the city's most valuable assets.

Sent from my iPad

Subject: FW: Feedback Health Impact Assessment

>>> 10/16/13 2:37 PM >>>
Ms. Gower, as a Toronto resident and Porter user I am very concerned about the proposed expansion of the Island Airport but in particular the health impacts this will have on downtown residents especially children and the elderly. Two studies published in the British Medical Journal offered "preliminary evidence that aircraft noise exposure is not just a cause of annoyance, sleep disturbance and reduced quality of life but may also increase morbidity and mortality from cardiovascular disease."
While noise is an increasingly common occurrence for people who live in urban areas the introduction of jets to a dense urban area will have a huge impact on the quality of life in an area that is undergoing a much needed revitalization. I hope that as part of your evaluation on the health effects there is sufficient study on not just noise which is but one element, but all other associated health side effects from having jets introduced to the downtown core.

http://www.cbc.ca/news/health/aircraft-noise-tied-to-higher-heart-diseas
e-risk-1.1931092?cmp=rss

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Thank you.

Sent: Wednesday, September 25, 2013 11:52 PM
To: Papageorgiou, Agni
Subject: Health Impact Assessment - Billy Bishop Airport

Hello

I was recently speaking to someone who works at Pearson, and he mentioned he's very surprised he hasn't read about the threat to our water supply posed by the glycol used to de-ice planes at Billy Bishop Toronto City Airport.

He told me that at Pearson, because glycol was running off into Etobicoke Creek, they had to install a $80-million + system to capture it, thus preventing it from entering a waterway.

I wonder if similar precautions have been taken at Billy Bishop Toronto City Airport? With the potential of much longer runways extending over the lake, and more planes, this issue should be of paramount importance.

Millions of people depend on Lake Ontario for their drinking water; do we want to risk poisoning our water supply for the sake of more air traffic downtown?

Thank you for taking note of this concern.

To: <sgower@toronto.ca>
Date: Wednesday, October 16, 2013 5:08 PM
Subject: Island Airport Health Impact Assessment

Hi Stephanie

The two impacts I am aware of are...

1. **Noise:** I routinely get awaken by airport noise about 6:45 am. I am retired and used to look forward to my Golden Years of sleeping in until 8 am or so; it doesn't happen! Often the noise is the sound of aircraft engines taking off, but other times it is aircraft engines 'turning over' for many, many minutes or sometimes it is fireworks that the airport uses to scare birds away.

2. **Air pollution:** From time to time I can smell aircraft fuel in the air; that can't be good for us as a senior couple with aged lungs, or the kids at the local school at Bathurst and Queens Quay.
Strangely, the stink of fuel in the air was at its worst one day when Councillor Adam Vaughan was doing one of his walks in the neighbourhood and we arrived at Dan Leckie and Queens Quay; it made our eyes water - that can't be good.

CommunityAIR - working towards a clean, green waterfront

October 15, 2013

Dr. David McKeown
Toronto Medical Officer of Health

By email: publichealth@toronto.ca

Re: BBTCA Health Impact Assessment Air Modelling Study

Dear Dr. McKeown:

It is with dismay that CommunityAIR learned last week at Public Health's Health Impact Assessment (HIA) Workshop that the HIA, in conjunction with the city's Billy Bishop Toronto Centre Airport Review (Review), has elected to forego an empirical study for the sake of expediency.

Public Health's consultants, Golder Associates Ltd. in its air quality study has eschewed air monitoring in favour of air modelling in order to advise on the health risks facing those living, attending school or daycare or playing in the vicinity of the airport.

It is CommunityAIR's position that an air modelling study has the potential to short change those affected by the by-products of the combustion of leaded and unleaded aviation fuel around the nearby airport. A study that includes air monitoring, the capture and analysis of samples, would eliminate any potential oversight.

On June 17, the City's Waterfront Secretariat first public consultation at city hall heard from a deputant who voiced her concern about the black oily substance that covered her boat and sails after only a few days in the dock. She moored at a club by the airport. Her concern was not isolated. Informal observations are numerous. Neighbourhood residents reported noticing a black greasy substance on the outside of their windows when Porter first started flying, then inside the windows as the airport ramped up activity. The black oily substance has yet to be analysed.

In 2003, the Toronto Port Authority's consultants RWDI conducted an air quality study (copy attached). RWDI used air modelling, not monitoring. The computer air-modelling

7th Floor, 150 John Street, Toronto M5V 3E3
http://www.communityair.org/

program RWDI did not have the capability to measure particulate matter. Neither was lead accounted for. No air samples were taken for this study.

In October 23, 2006, Porter Airlines started service with 20 daily landings and take-offs[1]. On November 1, 2010, Porter was up to 124 daily landings and take-offs (Spreadsheet Attached). In November 2010, RWDI did a second air quality study (copy attached) again using air modelling. The study was to ascertain the effect on air quality from 2010 to 2016 based on a greater increase in activity at the airport.

The study estimated but did not measure particulate matter or lead. As the report says, "…aircraft emissions of particulate matter are currently not available in the Emission and Dispersion Modeling System (EDMS) Page 2, and concluded that expected activity at BBTCA will not result in adverse effects in local air quality overall. No air samples were taken for this study.

In 2003, RWDI's air modelling did not foresee air quality deterioration from increased airport activity. Ditto for 2010. Yet, visitors and residents report oily black deposits around where they work and play. Is there a disconnect between what the air modelling studies conclude and what airport neighbours report?

In 2011, Golder Associates produced a report, *An All Sources Cumulative Air Quality Impact Study of South Riverdale – Leslieville – Beaches*[1]. Golder used a modelling system to investigate air pollution issues in the stated areas, electing to use databases and computer programs to project what was in the air people were breathing.

Nevertheless, in their report Golder cited monitoring stations as the benchmark. Benchmark or not, Golder will not be using air-monitoring stations for the Board of Health BBTCA study. Instead, Golder will be using receptor points in a computer program, receptor points which extrapolate findings based on assumption.

Interestingly, Golder, in a caveat about monitoring, notes that local monitoring in the study area may not identify issues in the study area unless the air monitoring stations are immediately adjacent to sources coming from that area.

Isn't that the point of the study, to learn what's in the air around the airport from taking samples and analyzing them? Instead, Golder plans on using computer models and if the Riverdale study is anything to go by, the results are sure to raise questions.

Golder's Riverdale study, Section 8.3 Potential Modelling Improvements, points out shortcomings. Included is the observation, Para 3, that the U.S. data was from 2002 or nine years old. How can this possibly compare to real time data from monitoring samples?

The Riverdale study also notes in Section 8.2.1 Findings points out,

> "The model **over- predicted** Nox levels and **underpredicted** PM2.5 levels." *Emphasis added.*

With modelling that uses stale data and over-predicts and under-predicts, how much confidence can residents of and visitors to the island airport neighbourhood have in the results in Golder's upcoming study?

CommunityAIR urges Public Health to give those living, attending school or daycare or playing in the vicinity of the airport the assurances they deserve about the air they're breathing.

Please don't settle for estimates and predictions based on estimates and predictions courtesy of a computer program. Please insist that Golder Associates Ltd. take and analyse air samples from the airport neighbourhood to establish actual, not virtual, benchmarks and let the airport's neighbours know what's in the air they're breathing and especially if its components exceed provincial air quality standards.

Yours truly,

Chair, CommunityAIR

Copied to

sgower@toronto.ca

mcampe2@toronto.ca

boh@toronto.ca

[1] https://www.flyporter.com/About/News-Release-Details?id=f78293a4-c010-4dbb-ad08-f8cceab2553e&culture=en-CA

Subject: FW: Re:

>>> 10/15/13 7:03 PM >>>
I live at Queen and Roncesvalles.
There are planes flying over my house all the time. I know they are not allowed and it makes me so angry that you would consider giving them more planes when they ignore the present violation of my air space.

Condominium Residences

TO ALL CITY OF TORONTO COUNCILLORS:

Kings Landing @ 460, 470 and 480 Queens Quay West is well known in Toronto as one of the first condominiums built along Toronto's Waterfront--and the only one ever to designed by the noted architect Arthur Erickson.

Our residents have generally succeeded in a wide variety of careers, and are usually thoughtful and aware, and not given to rash statements or actions However, over the past few years with the incremental growth of activity on the Billy Bishop Airport the noise and pollution from the Q 400 planes primarily used at the airport continues to have a strongly negative impact on our lives in Kings Landing.

A Noise and Pollution Committee was formed in conjunction with our Board of Directors, and a series of meetings were held with such communications organizations as the BQRA (Bathurst Quay Residents Association), and the CLC, (Community Liaison Committee).

We also arranged special meetings with the Toronto Port Authority President and his executive team, along with a tour of the Airport facilities with its executive group. These collaborative efforts were taken to get us some relief from the noise and pollution—but little or no improvement was forthcoming—or even possible, it seemed to us.

In a recent comprehensive poll, our Kings Landing residents were virtually unanimous in their strongly negative reaction to the effect airport noise was having on our lives, resulting in the preparation of this open official letter of complaint on behalf of our Kings Landing residents.

METROPOLITAN TORONTO CONDOMINIUM CORPORATION No. 781 (M.T.C.C. No. 781)
480/460 Queen's Quay West, Suite 200, Toronto, Ontario M5V 2Y5/4
Tel: (416) 260-9458 Fax: (416) 260-0032

Purpose

The specific purpose of this open letter to all members of the Toronto City Council is:

- To voice our strong disagreement with the Toronto Port Authority and Porter Airlines plan to seek Council approval to amend the Tripartite Agreement to allow the extension Billy Bishop Airport runways and

- To permit the introduction of jet airplanes into the airport, in the heart of downtown Toronto.

Both the runway extension and the jet airplanes are specifically prohibited by the existing Agreement, which was put in place to protect Toronto's only waterfront, for use by all the people of Toronto, and for some 10,000 thousand of citizens who make their homes along the waterfront.

- **Toronto Waterfront Is a Major City Asset**

Like most Toronto citizens we are being uplifted by the billions of dollars of public and private money being spent to beautify and revitalize our waterfront into a sustainable work/life community. As reported in a Toronto Star on May 2, 2013 "Waterfront Toronto has signed Private-sector deals worth $ 2 billion and creating 16,000 full time years of employment. In addition to that is the $ 9.6 billion generated by the 'Catalytic effects' of waterfront revitalization."

- **Toronto Has One Of Largest Waterfront Populations in Canada**

Toronto has one of the largest waterfront populations in Canada. However, with the incremental growth of Billy Bishop airport operations, the pollution and noise is already negatively affecting those who have chosen to make the waterfront their home, let alone what it would be if jets were permitted with more flights, more noise and more pollution. The large investment in waterfront development would also be negatively affected. Imagine jets flying by as you enjoy a boat cruise, walk or bike along the waterfront, soak up the sun at Sugar Beach or H20 Park or try to listen to concerts at the Music Garden, or make a movie with the plane sound interruptions. Visitors and Toronto residents come to our waterfront with their friends and family as a respite from city life with their family and friends. They are not there to watch airplanes roar over their heads.

- **Jets Are The Antithesis Of Toronto's Waterfront Vision**

  The TPA and Porter Airlines proposal to introduce Jets at Billy Bishop Airport includes the extension and paving over the lake by some 636 meters—three football fields. It is an arrogant assault on our Toronto waterfront. Such a permanent change will negatively impact marine life, recreational boating, and the waterfront environment intended for the use and enjoyment of all citizens. This runway proposal is completely counter to the objectives of Toronto's waterfront improvement strategy.

- **Airport Already Eroding Life On The Waterfront**

  We, who live on the waterfront, witness Toronto's waterfront being degenerated daily by the intolerable noise and pollution already coming from a busy airport. People who aren't one of the some 10,000 people who live within range of the airport, don't have any idea that we often can't carry on phone calls, or talk normally with friends and visitors without closing our doors and windows against airplane noise. Airport noise also regularly prevents us from using our own terraces. It also interrupts the nearby school classes, and parents worry about the safety of their children going to school, and worry about their children crossing streets near the airport. And now, there are credible reports that all this is pushing down the value of our properties.

- **Our Quarrel Is Not With Porter Airlines Itself, Only That It is In The Wrong Place**

  We acknowledge a select group of mostly downtown frequent flyer business people find the airport convenient, and we believe Porter Airlines itself is well regarded by them.

- **The Tripartite Agreement Was Originally Established to Protect The Public Trust**

  The Tripartite Agreement of 1985 was originally and wisely intended to protect our waterfront and the quality of life of downtown city residents while maintaining a small airport presence on the Island. The Agreement was intended to be an umbrella to protect the quality of life of Toronto citizens by specifically limiting the size and type of planes to be allowed, as well as limits on the noise which would be permitted.

- **The Proposed Amendment Of The Agreement Is A Breach of That Public Trust**

  The proposal to amend this agreement to include jets will tip this balance against the pride and enjoyment of the citizens of Toronto and our many visitors—and most importantly destroy our vision of Toronto being famous for its world class waterfront.

- **Faulty Logic Hurts World Class Toronto**

  Why would a world class city, on the one hand spend billions to improve its exceptional--and only- waterfront, while on the other, give a single, reportedly unprofitable airline

company a virtual monopoly, on largely government parkland ? What other city in the world would choose to do that? Ask the people of Chicago, who closed their mid-city airline, and now are so proud of their newly developed waterfront. Today, television ads promoting Chicago as a tourist destination features their new waterfront.

- **Direct Rail to Pearson, Makes Billy Bishop Unnecessary**

  With the direct rail link from Union Station to Toronto's Pearson International Airport scheduled for completion in 2015, the city will have spent $ 1.4 billion to speedily move people from the center of the city to Pearson which has hundreds of jets going to all parts of Canada and the USA, and the world. 2015 is also the same year when Porter's new Bombardier jets, if approved, would be available. In 2015, there would be no need for even more jets at Billy Bishop.

In summary, we do not see any public benefit in expanding the current island airport at the expense of our beautiful waterfront, and its varied uses for Torontonians. Noise and pollution already deeply affect the lifestyle of residents of Kings Landing, along with the thousands of others who lived along the waterfront. We daily experience the sharply negative effect an oversized airport has on the heart of our city.

City Councilors are uniquely close to the people they serve. Most Councillors originally ran for city council because of a deep desire to serve the citizens of Toronto.

This airport issue is a significant opportunity for City Councillors to protect the public trust, by voting against jets on our world class Toronto waterfront.

Dated at Toronto, Ontario this 28th day of June, 2013

Yours truly,

Metropolitan Condominium Corporation No. 781

Dan Bordun

President

Subject: FW: Decide against Airport Expansion on the Waterfront

>>> 10/15/13 3:21 PM >>>
Dear Stephanie Gower:

I have lived downtown and enjoyed the waterfront and the islands for 40 years.

To protect our waterfront from the expansion of the airport I have signed all the petitions and filled out all the surveys I could find -- and have written my reasons in my own words on many of these forms.

Today I do not have time to re-write the letter below in my own words, but I agree with it and hope you will too.

"Jets at Billy Bishop Airport, aka the Island Airport and Toronto City Airport, will increase air and water pollution for Toronto in general, increase noise pollution in the waterfront area, and risk fuel spills in Toronto harbour that would further pollute the city's water supply. As well, the construction of the extended runways that would be necessary to accommodate jets at the island airport would mean adding landfill to the harbour, thereby harming the ecology of Lake Ontario and having a further negative effect on the waterfront.

I urge you to ensure that Toronto Public Health remain faithful to its stated mission of reducing health hazards and improving the health of the whole population of the city, and that it accordingly reject in perpetuity the idea of jets at Billy Bishop Airport."

Thank you,

Subject: FW: airport consultation

>>> 10/14/13 12:49 PM >>>
I understand that TPH did a consultation for certain people the other day regarding environmental concerns at the Island airport and the looming prospect of jets and runway expansion.

I live in the Beach which I understand is supposed to be a no-fly zone, but I can assure you that over the past several years there has been a huge increase in air traffic practically over our house. It is incredibly noisy, night and day – we feel like we are living at Pearson.

I cannot say whether the planes are Porter or other, but the bottom line is that the daily and nightly noise pollution is excruciating and approving jets for Mr. DeLuce's end run around a signed 35 year agreement that there would be not jets will not only increase the noise pollution but also environmental pollution.

Please urge city council to deny Mr. DeLuce's demands, for all the right reasons.

Subject: FW: Submission to HIA Island Airport Jet Proposal

>>> 10/15/2013 11:14 pm >>>
opposed to congestion on the ground and in the air and pollution from jets/increased air traffic.

Sent: Wednesday, October 16, 2013 2:45 PM
To: sgower@toronto.ca; boh@toronto.ca
Subject: Health Impact Assessment: Inclusion of Water
Attachments: Littlejohn_HIA_Concerns_October_16_FINAL.pdf

Dear Stephanie, and the Toronto Board of Health,

I have attached my Health Impact Assessment for your files to meet the deadline today.

I spent many hours of research on this response, and have sent it on so that its concerns will be considered carefully by the Board of Health to include water, in addition to noise and air, in your research scope for the Health Impact Assessment as the jet airport expansion will fly directly above our source of drinking water, Lake Ontario.

Please acknowledge its receipt by this email.

Regards,
--

October 16, 2013

Participant's Response to 'Scenario 1': Current Conditions for the Expansion of the BBCTA and Request for Inclusion of Water in its Scope

Dear Stephanie Gower, and the Toronto Board of Health:

As a participant of the Health Impact Assessment ("HIA"), I am writing to state my concerns with the currently defined scope of the environmental assessment by the Toronto Port Authority and the City of Toronto. I am a sustainable design researcher, and my knowledge of the relevant issues and problems with the Assessment has led me to recommend and note the following:

- that the HIA should be broadened to include water in its scope;
- that there is not enough time to provide a comprehensive report to City Hall with due diligence given the limited time frame;
- the HIA consider that jet expansion will have long term impact on the future health of Toronto by polluting its water source;
- to research Scenario 1 (Current Conditions) to evaluate the environmental impact of the present level of air traffic before proceeding with the other scenarios;
- to apply the precautionary principles of environmental protection as noise and air data from the CS100 and Union-Pearson Express Link will not be made available before the deadline to include within the scope of the data modeling, and
- therefore to deny the ratification of the Tripartite Agreement as there is insufficient time and environmental data for the Toronto Board of Health to provide a reasonable Health Impact Analysis of future CS100 emissions including the cumulative expansion of rail, air and ground traffic in the west-end of Toronto in relation to jet expansion.

I strongly recommend that the HIA include water pollution as an integral part of the scope of this study with particular attention being given to analyzing the effect of de-icing fluid runoff into ground and lake water, jet exhaust as emitted over Lake Ontario, and the impact of runoff from transport fuel trucks, fuel farms and service vehicles, with the increased jet traffic's fuel emissions. It is helpful to consider water's synergistic effect with noise and air pollution to analyze its impact on the quality of life of Toronto's waterfront, parks, lakes and Blue Flag beaches. With the proposed 200 metre extension of the runway at each end this should include the change in the self-cleansing properties of water through partially closing off currents in the Western Gap, and the possibility of a higher incidence of water borne pathogens, such as E. Coli, at the beaches.

Billy Bishop Airport is situated so that the jets take off and land directly over Lake Ontario, and as a result its location has particular geographic implications for a

comprehensive health impact analysis in relation to water pollution. The Great Lakes contain 20 percent of all surface freshwater on the planet and provide drinking water for 30 million people in the U.S.A. and Canada, support a $7 billion fishery industry, and support the world's fourth largest regional economy. (Source: "The Great Lakes are in peril…again-Inland waters are threatened by problems old and new" Essay by Jeff Alexander
http://illinoisissues.uis.edu/archives/2013/07/greatlakes.html).

Polluting Lake Ontario's water will have long term consequences for the health of Toronto's residents, which includes vulnerable populations, and will affect our access to clean drinking water. Everyone who lives in Toronto should be included within the definition of 'vulnerable population' as defined by the HIA (from healthy adults to children) as the environmental impact of the aviation industry and its emissions will affect everyone in Toronto as we all drink Lake Ontario's water and breathe the air from the waterfront as it travels inland. Airport-related pollution increases the incidence of respiratory and heart-related disease, asthma and sleep disruption in healthy populations, and thus cannot be said to confine itself to a specific subgroup and nor does it confine itself to the immediate vicinity of the airport because of flight paths as wind and water currents carry jet emissions, whether as air or water borne pollution.

I have focused on the mitigation measures for 'Scenario 1: Current Conditions' in my response as the continued expansion of the air traffic at the Billy Bishop Airport has resulted in an increase number of passengers from 26,000 in 2007 to 2.3 million in 2013. This should necessitate a study for the Toronto Board of Health as it currently stands as its air traffic has increased one hundredfold. The impact of the tunnel has not yet undergone an environmental assessment but should, and at each stage of this rapid expansion of air traffic air, water and noise pollution should have been monitored to analyze its impact on the affected population. This should include projections for cumulative data modeling for the expanding rail, air and ground traffic in the west-end as it will inevitably increase with population growth in the GTA.

If the current mitigation scenario were to undergo a comprehensive analysis by the Board of Health it has been documented that current pollution from the airport already exceeds the Minister of the Environment's quotas in relation to noise and air pollution. Furthermore, an Environmental Assessment conducted at the Toronto City Centre Airport (now Billy Bishop) by Trow and Associates Inc. in April 2005 shows that the airport generates waste glycol from de-icing of aircraft during the winter season. The removal of this liquid waste is collected through a series of catch basins on the main apron that is separate from the storm water drainage sewers and discharge areas. From the catch basin the drainage then flows to the Island's sanitary treatment facility. However, it is noted that the City's sanitary sewage treatment facility is at Ashbridge's Bay and not at the Island so the de-icing fluid is being dumped into the sanitary sewer system as stated. The glycol and wetting agents in de-icing fluid are noxious/poisonous and there have been allegations

made that they are not removed by the treatment process. Section 20 of the Tripartite Agreement prohibits the discharge into the sewer system of noxious and poisonous substances. Thus, this line of inquiry should be pursued in order to ensure that the de-icing cleanup process is not resulting in water contamination, and the impact of additional aircrafts operating out of the airport and being jets ought to be examined.

The following is a list of research areas concerning water pollution that I recommend to be included in the scope of the HIA:

1) data modeling the increased pollution of the AVGAS A-1 jet fuel of the proposed CS100, which will use twice as much fuel as the Q400s, with projections including its increased jet traffic over the next years, and idling on the tarmac due to increased flight numbers, or if , in the Second Scenario, with Q400s, increased slots;

   Reference: Jet fuel: An Introduction
   http://www.alglas.com/jet_fuel.htm
   "Both JET A and JET B typically contain a number of additives, including: Antioxidants to prevent gumming, usually based on alkylated phenols (AO-30, AO-31, or AO-37); antistatic agents to dissipate static electricity and prevent sparking; corrosion inhibitors (DCI-4A used for civilian and military fuels, and DCI-6A used for military fuels); and fuel system icing inhibitor (FSII) agents, such as Di-EGME (FSII is often mixed at the point-of-sale so that users with heated fuel lines do not have to pay the extra expense)."

   Reference: Science News
   Jet exhaust, sunlight can create pollution
   http://www.upi.com/Science_News/2011/05/10/Jet-exhaust-sunlight-can-create-pollution/UPI-22301305081340/
   "Jet emissions are particularly harmful as their toxicity multiplies and expands in higher altitudes and the combination of sunlight and idling jets creates 35 times emissions toxicity than previously known. This toxic dust returns to the air, water and soil through the atmosphere, and lodges in the lungs, brains and heart. It is also said to be a factor in Alzheimer's."

   Reference: Jet Pollution The True Effects on Humans and Sedona
   http://www.closetheairport.com/jet-pollution/
   "Jet fuel is a complex chemical mixture and only 200 of its 2000+ chemicals have been formally identified. All jet aircraft use Halon, a deadly, ozone-depleting chemical in their engines. JP-8′ s high flash point means it evaporates more slowly and remains on the skin for a longer period of time. Its performance-enhancing additives have also been found in published Air Force studies to enhance the ability of fuel hydrocarbon chemicals to cross through skin and enter the bloodstream. Due to the fuel

and combustion process air craft porduce PAH's (polycyclic aromatic hydrocarbons). These PAH's are known to be extremely carinogenic even in minute quantities. Sedona homeowners living near Red Rock Crossing under the jet flight path have high levels of carcinogenic, jet fuel petro chemicals in their blood. The highest number of jet events recorded in Sedona was during one weekend in May, 2007; one hundred and fifty jets landed in Sedona and took off in one weekend.

Nitrogen dioxide (NO2) is a brownish gas that is produced primarily as a byproduct of high-temperature combustion. Sedona has some of the highest levels of atmospheric NO2 in the country despite being a rural area. On a scale of 1-10 with 10 being the best, Sedona rates 1.4 for NO2."

2) the environmental impact of CS100s, and their flight path emissions, in relation to the fragile health of Lake Ontario, which we ingest as our drinking water. Lake Ontario is already in peril; we have lost 7% of its water due to extraction, and algae blooms were seen in Lake Ontario this summer due to phosphorous run off and surface water heating;

Reference: Lake Ontario 'Whiting' Leaves Water A Terrifying Neon Green (Image of Lake Ontario below:)
http://www.huffingtonpost.ca/2013/09/04/lake-ontario-whiting-algae-photo_n_3866094.html

Reference: The Great Lakes are in peril…again
Inland waters are threatened by problems old and new
Essay by Jeff Alexander
http://illinoisissues.uis.edu/archives/2013/07/greatlakes.html

3) the impact on water currents from the proposed runway extension, and its effect on the water quality of the Blue Flag beaches and inner harbor as the extended runway partially closes off the self-cleansing properties of water currents in the Western Gap, studied in regards to increasing E. Coli and other water borne pathogens, their potential impact on swimmers' and boaters' health, and the future loss of Blue Flag status for these beaches. This should include an evaluative study of air monitoring for off-gassing from the Billy Bishop Airport on to Hanlan's Point, which I have experienced each summer.

4) data modeling regarding the contamination of the groundwater under the airport from de-icing including its attendant service and fuel transport vehicles, fuel farms, and its leakage into Lake Ontario and surrounding areas;

Reference: The report commissioned by the Toronto Port Authority **"Environmental Screening Report For the Removal and Relocation of the Airport Administration Building, Billy Bishop Airport"** by SENES Consultants Limited, September 2011. The section on groundwater is p 4-3. The Admin Building was never relocated and sits on the airport property deteriorating as we speak.

http://www.torontoport.com/TorontoPortAuthority/media/TPASiteAssets/PDFs/Reports/350373---TPA-Airport-Admin-Bldg-Relocation-EA-09Sep2011.pdf

"Of course, airports pollute the ground water of the surrounding land as well, with all those fuel burning airplanes, not to mention their entourages of service vehicles. The tarmac on the airport produces the same problems as any well-travelled blacktop - a toxic brew of synthetic chemicals is washed off of the blacktop during the rain and into the ground where it soaks into the soil and contaminates the groundwater; thereby contaminating nearby water supplies."

Reference: Modeling and Managing Airport Performance
Edited by Konstantinos Zografos, Giovanni Andreatta, Amedeo Odoni

"Improperly controlled current or past aircraft maintenance practices often result in groundwater contamination by hydraulic fluids, lubricants, cleaning chemicals, etchants, paint strippers and related maintenance supplies.

Earth moving at airport construction sites can result in the transport of silt to nearby ponds or streams if not properly contained.

Chronic leakage of aviation fuels from underground storage facilities or distribution pipelines has often polluted significant portion of airports, in some cases, reaching the airport perimeter, and fouling adjacent waters. Likewise acute spills, both large and small, have occurred from catastrophic failure of tanks, of pipeline delivery systems, supplying on-airport fuel storage facilities, or unconfined refuelling spills that reach unprotected storm water drains in terminal aprons

As the use of increased quantities of aircraft and/or runway de-icing fluids increases to address safety issues during winter operations, the quantities of spend fluids has received increased regulatory scrutiny."

5) research and chemical analysis of the de-icing fluid for aircraft, and data modeling its projection for increase in quantity to de-ice the larger wing span of the CS100, and its toxic effect on aquatic and marine life in the inner harbour ;

Reference: Water Study O'Hare: De-Icing Fluid
http://www.areco.org/pollute.htm - WATERSTUDY
"Why do we care so much about this stuff? How do we know it's dangerous? Two ounces of pure ethylene glycol, if swallowed, can blind or kill a small adult. One ounce can kill a pet. In lower amounts, ethylene and propylene glycol can cause kidney damage, dangerously low number of red cells (sometimes fatal), cancers, and serious gastrointestinal diseases if swallowed. If breathed it causes dizziness, alters brain circulation, and causes lung and heart damage. To make matters worse, the dioxane/formamides/acetaldehyde additives cause cancer, major birth defects, and a host of other serious or fatal diseases. These additives are NOT biodegradable. There are no OSHA standards to limit workers' exposure to them. There is NO chemical process at Stickney or elsewhere which removes them from your drinking water. That's why we are so concerned about millions of gallons of these fluids being used without regard to health; the fluids are going into local water and groundwater."

Reference: Aircraft De-icing Operations
Anna Vasilyeva
"The EPA has identified the following environmental impacts of de-icing discharges:

- Dissolved oxygen levels in receiving waters of de-icing stormwaters discharges are reduced.
- Nutrient concentrations in receiving waters of de-icing stormwaters discharges are increased.

- Dead zones for aquatic life downstream of de-icing stormwater outfalls.
- Overall impact to aquatic ecosystems such as drop in organism abundance and diversity.
- Groundwater and surface drinking water resources contamination.
- Foaming, noxious odors, and discolorations of surface waters.
- De-icing stormwater odors have brought on headaches and nausea complaints by people who are exposed to them."

6) increased pollution concentrated in the air above Lake Ontario from jet emissions contributing directly to climate change as the NOx, CO2, CO and particulate exceedances are far above the average of the rest of Canada already, and are concentrated in the densely populated west end of Toronto, in fact, all of Canada, due to multidirectional flights from different airports - Pearson, private airports, ORNGE, and Billy Bishop. From flight path emissions, jet exhaust becomes precipitation that goes down directly into Lake Ontario without mitigating measures, and its pollution is intensified at elevation, and while idling in sunlight, at 35 times its toxicity;

7) data modeling of other emissions sources for pollution, including taxi idling and traffic by the nearby school, which has caused incidences of asthma in preschool children, and which also adds to the petroleum runoff into Lake Ontario from the roads and tarmac:

Reference: Modelling and Managing Airport Performance
Edited by Konstantinos Zografos, Giovanni Andreatta, Amedeo Odoni

"Aircraft are not the only source of aviation emissions. Airport access and ground support vehicles produce similar emissions. Such vehicles include traffic to and from the airport, ground equipment that services aircraft, and shuttle buses and vans serving passengers. Other emissions sources at the airport include auxiliary power units providing electricity and air conditioning to aircraft parked at airport terminal gates, stationary airport power sources, and construction equipment operating on the airport";

8) analysis of water and air pollution from pollution from everything associated with airline industry/airport, including incineration from trash, especially if Porter is granted jets to serve international destinations:

Reference: Modelling and Managing Airport Performance
Edited by Konstantinos Zografos, Giovanni Andreatta, Amedeo Odoni

"With all those shops in the airport producing single-serve items for use on an airplane and to be thrown away immediately after use, airports produce many tons of solid-waste garbage every day. Each jet airliner produces

anywhere from 1 to 1 1/2 cubic yards of solid waste on average per flight. On international flights, all that solid garbage must be incinerated or sterilized to avert contamination of local areas with foreign microbes. If the trash is incinerated, that contributes to air pollution and if the trash is sterilized, toxic chemicals must be used which then often find their way into the local groundwater";

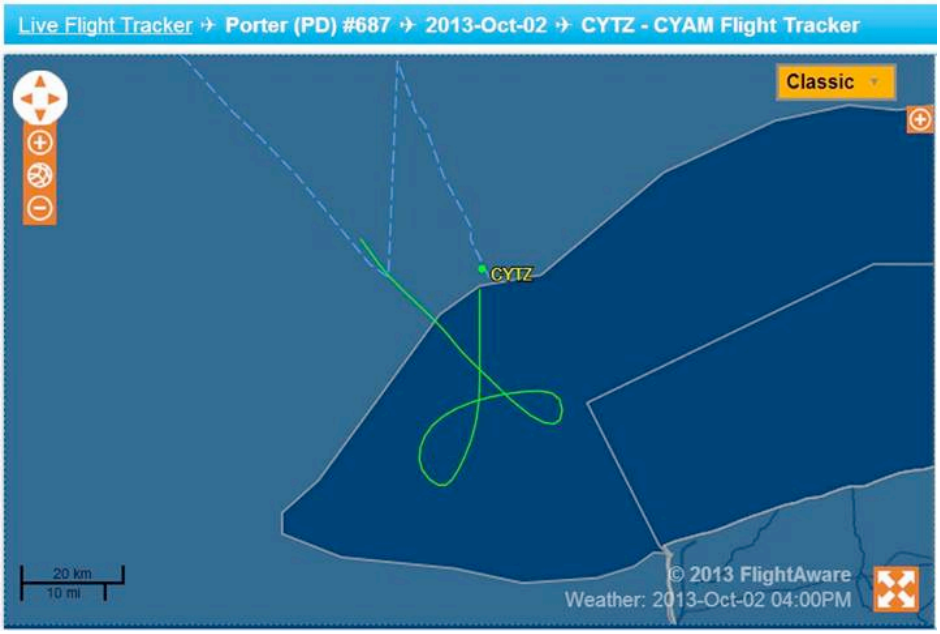
9) include data on fuel dumping from flying aircraft, and its impact on Lake Ontario, marine and plant life. Aircraft often dump excess fuel before landing as a safety measure: to protect the aircraft's structure and landing gear, reduce the chance of a brake fire, and to ensure a safe landing.

Reference: "What are an Airport's Impacts?"
Section 2.13 Water pollution:
http://www.aef.org.uk/uploads/PlanningGuide2.pdf
Fuel release: http://www.aef.org.uk/uploads/PlanningGuide2.pdf

Example of Jet Fuel Dumping:

In an emergency situation, if a plane has to immediately land as in the case of the Oct 2 incident where Porter Flight POE-687 had to make an emergency landing at Pearson, the plane must have dumped fuel over the lake to reduce the plane's weight for landing. If you look at this flight path photo, it is clear that the plane did a wide arc and circled back north towards Pearson. A plane cannot land at the same weight it took off -- therefore fuel had to have been dumped somewhere in the lake.

Image of Porter's POE-687 flightpath on October 2, 2013:



Reference for Impact on Plant Life: Jet-fuel dumping behind Tenn. crop damage some blamed on BP spill
http://www.southernstudies.org/2010/07/jet-fuel-dumping-behind-tenn-crop-damage-some-blamed-on-bp-spill.html

"Fuel dumped from planes can be transported by the wind and transformed photochemically to ozone and other components of smog, according to the U.S. Agency for Toxic Substances and Disease Registry. It's made up of various toxic hydrocarbons including benzene, which has been linked to cancer. Jet fuel also contains a number of additives including biocides to control bacterial and fungal growth in aircraft fuel systems", and

10) include data modeling of the emissions of the expanding airport in conjunction with the Union-Pearson Express rail corridor, and increasing rail, highway and air traffic due to population growth in the GTA, thus to synergistically data model the cumulative environmental impact for the combination of diesel rail and kerosene-based air traffic pollution in relation to the already over-burdened west-end of Toronto.

Additional references on Water:

Hamilton airport water pollution legacy:
http://www.thespec.com/news-story/2247400-hamilton-airport-s-water-pollution-leaves-region-with-a-dangerous-lega/
De-icing: http://www.newcastleairport.com/water-quality

Violation of water pollution: http://www.areco.org/orddec.pdf
Report on Water Pollution at O'Hare Airport:
http://www.areco.org/waterstudy.pdf

Additional references on impact of Jet Fuel Spills:

The Slocan Valley BC jet fuel spill was so devastating to the community that a lawsuit has been launched.
http://www.theprovince.com/news/Lawsuit+launched+over+fuel+spill+that+contaminated+creek+Slocan+Valley/8773592/story.html
http://business.financialpost.com/2013/07/29/dead-fish-surface-after-35000-litre-jet-fuel-spill-into-lemon-creek-b-c/?__lsa=f019-c97b

Video:
http://www.youtube.com/watch?v=axgi5RSzAZs

Jet fuel data
sheet: http://www.tsocorp.com/stellent/groups/corpcomm/documents/tsocorp_documents/msdsjetfuel.pdf

Fuel farm contamination story from 1991:
http://articles.latimes.com/1991-03-07/news/hd-3615_1_jet-fuel-tank-farm

In summary, there is simply not sufficient time to provide a full scope of the environmental impact of the airport expansion with jets, particularly in relation to its unique geographical location for an airport which will have hundreds of flights daily taking off and landing directly over 30 million peoples' drinking water. Drinking water will become increasingly scarce as it comprises just 2.5% of the world's surface water, and I believe that we should do everything within our power to protect Ontario's clean water for the future, and apply environmental precautionary principles to this request for airport expansion by not permitting the ratification of the Tripartite Agreement to include jets, and to examine Scenario 1: The Current Conditions, and the present environmental impact of the rapidly increasing air traffic of the Q400 turboprops. as the first priority of the Toronto Board of Health.

I have also included in this submission for your reference for background information on the impact of this jet expansion on the Toronto Island Park System.

Please do not hesitate to contact me if you have any questions or concerns.

Regards,

Attached Deputation: EX33.18, Porter Airlines Expansion and Consultation Process

July 3, 2013

Re: Item EX33.18, Porter Airlines Expansion and Consultation Process

Dear Mayor Ford and the Executive Committee,

Today, as a Toronto resident, sustainable design educator and researcher, and someone who visits the Toronto Islands Parks frequently, I am going to speak about two issues close to my heart- that the projection of the pollution from jet and rail emissions has not been fully factored into the consultation process for the expansion of Porter Airlines, and that the Toronto Islands Park System are used by many people, including international tourists and low income families, as their refuge during increasingly hot summers, and should be protected as a cherished public asset for the City of Toronto.

If Porter Airlines is allowed to expand, it will duplicate international flights from Pearson Airport, and take business away from the Union-Pearson Express and Pearson. Between kerosene-based jet exhaust and diesel rail traffic, the amount of pollution will be multiplied in the most densely populated area of the Greater Toronto Area and the waterfront; this smog comprised of nitrogen dioxide and sulfur dioxide has been proven to be carcinogenic by the World Health Organization in 2005.

Those who live in the west end of Toronto are already facing an undue burden of diesel and jet fuel pollution, and as someone who has acquired adult asthma over the past four years from the poor quality of air in Toronto, I am increasingly concerned about my health affected by transit pollution. So much data is not yet known about the synergistic combination of diesel and jet exhaust, but it is known that jet emissions are particularly harmful as their toxicity multiplies and expands in higher altitudes, and the combination of sunlight and idling jets creates 35 times emissions toxicity than previously known (see attached article from Science News). This toxic dust returns to the air, water and soil through the atmosphere, and lodges in the lungs, brains and heart. It is also said to be a factor in Alzheimer's. The Waterfront School and St. Stephen's Daycare located near the ferry docks to the Island Airport are witnessing asthma in preschool children for the first time.

As a resident of the west end of Toronto, I would like to ask the Executive Committee, will the environmental assessment of the expanded airport include the increased pollution of the Union-Pearson Express rail corridor, which is currently under construction for the Pan Am Games, and the future Island Airport expansion, to be able to realistically project the double whammy of the accumulation of toxins of rail and jet emissions in our water, soil and air? There are so many variables that should be projected as part of this speedy two-part consultation, including a full

environmental assessment on this expanding airport's future and present impact on air, future noise levels and water quality.

Although I am concerned about whether the full scope of the data is used for the consultation, including its projected cumulative impact on our environment until 2033 (the year the Island Airport's lease expires), my other fear is loss of the Toronto Islands Park System held in common as a quiet, clean, green refuge. This Toronto Island Park System is a beloved public asset. Each summer, I watch the ferries fill to the brim with visitors to Hanlan's Point, Center Island, and Ward's Island. I have sat on the beach at Hanlan's Point, and been bothered by the noise and off gassing of turboprops at the Island Airport. I cannot imagine this noise level increasing with jets without effecting the enjoyment of this historic beach, and wonder why so much work has been done to clean Lake Ontario, yet an airport is allowed to increase its flight paths directly above it.

Each year, there are 1.22 million visits to the Toronto Islands, and 12.5 million visitors to the Harbourfront Centre, escaping the heat of a city building more and more high rises, with less and less green space. Immigrants hold family reunions, lovers walk arm in arm on the boardwalks, and international tourists navigate the flower-filled maze of the Toronto Island homes in bemused wonder.

Many of those lower income visitors cannot afford to flee to cottages, yet can afford $7 for the round trip on the ferry. As Baye Hunter, an Islander and Adult English as Second Language teacher says:

"Many of my students really love the Toronto Islands, but come from countries where speaking out against a government would send them to jail, or cost their life. So even if they oppose airport expansion, they have no voice. Increased flights over the parks would really take away from their enjoyment of Toronto."

As the Greater Toronto Area becomes more dense, with a projected density of 44 per cent by 9.2 million over 25 years, where will people go to play sports, reunite, swim and stroll? The Islands are, on average, 3 to 5 degrees Celsius lower than the city center. Viewed from the Islands, the Toronto skyline shows the silhouettes of cranes building massive 60- to 100-storey high rises.

I question why any airline is allowed to expand its operations over our treasured public assets -- our parks, waterfront, beaches and lakes – when Porter is asking to expand to offer flights already provided by Pearson Airport?

If Porter would like to expand its business operations, it can do so at Pearson Airport. A more viable solution to increasing the number of short haul flights from the Island Airport would be to electrify the Union-Pearson Link so it can stop along the Georgetown corridor, and serve the twelve communities along its route, and integrating it with the subway system as part of the Downtown Relief Line.

Eventually, it would be best to electrify Canada's interurban rail system, so that there would be less need for short haul flights between Canadian cities.

I respectfully request that the consultation process include an environmental assessment on the present and future impact of the Island Airport's operations on air quality, noise levels and Lake Ontario's water quality, and include projections for diesel emissions of the future Union-Pearson Express, as part of the scope of the second part of this study.

Sincerely,

Attachment: Science News

Jet exhaust, sunlight can create pollution
http://www.upi.com/Science_News/2011/05/10/Jet-exhaust-sunlight-can-create-pollution/UPI-22301305081340/
Published: May 10, 2011 at 10:35 PM

PITTSBURGH, May 10 (UPI) -- Idling jet aircraft engines and sunlight can combine to make airports a far bigger threat to local air quality than previously recognized, U.S. researchers say.

Researchers at Carnegie Mellon University in Pittsburgh have found oil droplets emitted by idling jet engines can turn into particles tiny enough to readily penetrate the lungs and brain, ScienceNews.org reported Tuesday.

While Jet engines operating at high power levels throw off mostly solid particles, at low engine speeds, such as when a plane is idling at gates or on taxiways, emissions are mostly in the form of microscopic droplets.

Sunlight, the researchers said, can trigger chemical reactions on the oily microdroplets and gases in the air to generate solid particles.

"Driving this chemistry," Carnegie's Allen Robinson said, "was hydroxyl radical," an oxidant effective at catalyzing the breakdown of oily hydrocarbons.

"To create this hydroxyl radical, you need sunlight," he said.

This oxidation of the idling engine exhaust can generate 35 times more particles than the engine originally emitted, and 10 times what computer models have typically predicted, the research found.

Robinson said this could have a marked effect."If you're number 46 in line awaiting takeoff, you could spend an hour idling," he said.
Read more: http://www.upi.com/Science_News/2011/05/10/Jet-exhaust-sunlight-can-create-pollution/UPI-22301305081340/ - ixzz2Xz2SirbC

Subject: FW: Submission to HIA Island Airport Jet Proposal

>>> 10/14/13 9:16 PM >>>
Hi Stephanie

I would like to raise the following concerns:
1) I would like to see an assessment on water pollution from the proposed jets (assuming 4.3M passengers - 10M Passengers. I am also assuming that general aviation will get kicked out and additional commercial slots will be awarded to Porter. Please also factor that most passengers (76%) come by taxi/passenger car).
2) I would also like the city to assess the additional 20+ condos moving in the area around the Lakeshore Bathurst area and the expected impact to health
3) I would like a financial assessment in terms of increased health care costs to the city and province from increased health risks. This should be factored with the economic impact.
4) Please factor construction noise and resulting gridlock from a) Extending Runway Length and b) the various transportation solutions that the city will suggest.

Thanks

Sent: Thursday, October 10, 2013 10:20 AM
To: Papageorgiou, Agni; sgower@toronto.ca
Cc: mcmahoncouncillor; edwardbirnbaum-mcmahon's EA; laurie:mcmahon's-asst.; rmacfar3 @toronto.ca; aagord; mayor-ford; councillor_crawford@toronto.ca; councillor_fletcher@toronto.ca; councillor_davis@toronto.ca
Subject: Health Impact Study and East end wards

Thank you for your efforts last night to obtain so much information in such a short period.
I was the representative for ward 32.
With so many knowledgeable and caring people in the room, it was frustrating to try to cram so much information into post-it notes on the board.
For the record I would like to say that 3 weeks to do a health study that will impact thousands and thousands of waterfront residents is inadequate and disrespectful to their health and well-being. This reflects badly on our Executive Council and city.

Again as a representative from the East end, I would like to stress some urgent points from Wards 30, 32, 31, and 36, the East waterfront wards. First of all, the noise consultant did not seem interested in hearing our noise complaint concerns. Residents in the Beaches and Bluffs have been greatly disturbed in the last 2 years by the increase in noise from the Q400s flying over our homes. These are old established neighbourhoods with homes atleast 100 years old and low flying Q400s are noisy and stressful! The noise is from 6:45 am to atleast 11 pm which means we don't get 8 hours sleep any longer, 7 days per week! Any increase in any type of plane is unacceptable.

More urgently, I am deeply concerned about the report by Toronto Public Health official Ronald Macfarlane from Oct. 18, 2011 for "Cumulative Air Quality Assessment" South Riverdale and the Beaches. In this study he states that substances of greatest concern are: "benzene, 1,3-butadiene, and nitrogen oxides". The conclusion: "Efforts to reduce air pollution from transportation sources continues to be a priority in the City".
This was BEFORE the Portlands Energy Centre (which releases NOx and COs) was fully operational, and BEFORE Porter had so many flights over our area.
City Council then voted unanimously to "reduce the impacts of transportation emissions on air quality" (April 2012). Yet Porter was allowed to continue to increase the flights.
How can we even consider more pollutants when our area already has such a high asthma and cancer rate?!

The health and well-being of tens of thousands of residents MUST take precedence over the "convenience" of a few!!

Also our neighbourhoods provide much needed recreation and sense of well-being for thousands of visitors all year. In the summer, the boardwalks and parks are full with families having picnics and people arriving for much needed respite. Jets are not compatible with such an environment.

Thank you!

Subject: FW: 449am ferry wakeup

>>>> 10/12/2013 6:13 AM >>>
>
> HI Chris, hope you are sleeping soundly right now. I am not.
>
> I looked at my clock today at 449am and I am still awake due to ferry
> operation. I had room fan on, ear plugs in, windows closed. After not
> being able to fall back asleep after half hour, I got out of bed to
> investigate.
>
> I should note that the ferry driver is being very careful and driving
> very slowly the entire journey back and forth to island to try to
> avoid waking anyone up. I am confirming this as my light is on while sitting
> here typing and watching the ferry cross.
>
>
> OPEN WINDOW
> · I measured noise at open bedroom windowpane and ferry crossing
> toward mainland at 542am was generally 50dBA, however the last 45
> seconds as it docked at Bathurst slip was generally constant 53-54dBA.
> This compares to ambient of approx 44dBA at this time.
>
> CLOSED WINDOW
> · With window closed at pillow elevation, I measured 549am ferry
> crossing back toward island at generally 36-41dBA. With window
> closed, the noise magnitude does not appear to be as much of a problem
> than the noise change effect and the piercing mid range frequencies,
> which fluctuate very slightly. With window closed at pillow
> elevation, at 554am there were 3 loud sliding metal sounds which
> peaked at approx 43dBA. The subsequent 559am ferry crossing back to
> mainland with window closed at pillow elevation again peaked at 41dBA.
>
> · It appears that I was woken up by idling ferry (not moving
> ferry) inside Bathurst slip. With window closed at pillow elevation,
> the noise of idling ferry within 2 minutes of arriving into Bathurst
> slip at 601am is approx 38dBA with strong mid range pitch piercing
> through. The fluctuations in ferry engine pitch do not change the dBA
> readings.
>
> · At this time of day you can hear ferry pitch the entire time,
> whether in Bathurst slip or in Island slip, with bedroom window closed.
>
>
> I have had a series of early AM wakeups over past couple weeks for
> various reasons due to airport and I will call you to discuss. I keep
> accurate records of exact times and suspected cause. I have not logged
> series of complaints with TPA yet. I do not think this is what the
> Tripartite signatories had in mind 30 years ago for future residents
> to be doing today.
>
> I will now try to get back to sleep. I have had luck falling to sleep
> again in past as ambient noise begins to rise, masking ferry noise.
>
>
>

Sent: Thursday, October 17, 2013 1:56 AM
To: Papageorgiou, Agni; 'Stephanie Gower'
Cc: 'Christopher Dunn'
Subject: BBTCA HIA -concerns and issues
Attachments: hab-Study Completion Matrix (Porter Jet Proposal) Oct 16, 2013.pdf

Hi Agni,

Further to your email below, please consider the following very preliminary list of issues and concerns, supplementary to the workshop discussion on Oct 9, 2013.

The list is prepared and forwarded tonight to meet today's tight deadline of Oct 16, 2013. I am sending this email without proof-reading at 1:45am in recognition of today's deadline. I might be following up to clarify on some of these points. (Note that today's deadline was established by the City one week after the workshop, such that the week spans the Thanksgiving long weekend.)

Requests concerning Dec 2013 Health Study Report Contents

1. Please provide a matrix of how the potential health impacts relate to the health assessment factors. Ie. 'physical health, mental health, and well-being impacts' versus 'environmental, economic, social and cultural factors'. It is not clear.

2. Please tabulate all typical potential mitigation alternatives that could be considered for both the health impacts and health factors, and identify those that the study team focused on in the study.

3. Please provide a more fulsome list of relevant key resource documents that the study team believe are most applicable for this health study, for waterfront stakeholders to educate themselves.

4. Please provide information to the extent required by the Council Decision Items of May 7, 2013 (see attached page 2).

5. Please confirm if there are any health benefits possible for any waterfront stakeholders of introducing jet aircraft at Island Airport ie. are we only looking at a negative situation.

6. Please document specific populations reviewed and their geographic location. Per HIA Background materials, breakdown the populations based on: physical environment, social environment, income and employment considerations, genetics, and child development.

7. Please document the potential impacts to the physical health, mental health, and well being of the public.

Health Scenarios

8. Three airport operating scenarios were presented to the public for the first time on Oct 9, 2013. These have not yet been defined for the study team or the public. Please clarify the following for each scenario:

(a) Specific horizon years assumed for each scenario
(b) Number of slots of Q400 vs CS100 for each scenario

(c) terminal building/ gate configurations, terminal building, runway capacities, hush houses, etc. assumed for each scenario (What potential outcomes of Airport Master Plan not yet completed are assumed.)
(d) ultimate airport service capacity and unused airport capacity under each scenario
(e) slot schedules assumed for each scenario, clearly showing time and concentration of arrivals and departures separately, marked at 15 minute intervals. (Increased concentrations of flight movements affect health impact intensity. Departing pax will use Eireann Quay over longer duration than arriving pax.)
(f) buffer times between runway movements assumed, including time separating the turning on of each plane engine on any part of the airport grounds
(g) flight passenger slot loading and associated boarding pass rationing assumptions for each scenario, broken down into 15 minute intervals
(h) the proportionate increase in number of heavy post maintenance runups relative to May 2012 numbers
(i) the assumed number of planes moving on the ground simultaneously, or with engines turned on at any one time prior to using the runway

Data Collection (Noise, Air, Traffic)

9. Please provide a list of all test conditions that are typically reviewed prior to commencing Data Collection, and then clearly identify those actually investigated in the report.

10. Please calculate the statistical relevancy of technical data collected.

11. Please document the exact time, duration, and method of data collection.

12. Please document proposed net increase in background pollution anticipated due to Pearson heavy rail link.

13. Please comment on extent of reduction in health impact of airport since May 2012 due to reduction in airport passengers.

Electronic Modeling (Noise, Air, Traffic)

14. Please clearly document how electronic models used under the Health Study for the Dec 2013 report were calibrated and validated.

15. Please summarize all test criteria, comparing the standards against the study findings.

Noise Health Impact Technical Work

16. Please document conditions at comparable airports with respect to residential tower proximity and ability to overlook airport ground activities from resident sleeping and living quarters. A direct line of sight is a direct line of sound.

17. Please confirm healthy number of sleeping hours for community members ie. were Signatories reasonable in agreeing to current operating hours of airport or ferry.

18. What is maximum decibel reading at pillow elevation permissible that will ensure any community member at any age will not be woken up by airport runup, ferry, or flights.

19. Discuss dBA vs dBC measurement thresholds with respect to monitoring window rattling effects and sleep deprivation.

20. Provide a feasibility review of installing permanent web-enabled noise monitoring equipment on the outside of towers at targeted elevations.

21. Provide information with respect to emerging community noise mapping projects using smart phones, which can input into airport noise management programs.

22. Please provide information on banning car alarms from airport parking lots.

23. Provide practical advice for residents in coping with all airport related noise impacts and resulting stress from sleep deprivation eg. any dietary considerations, exercises during mid day to improve alertness at work due to airport sleep loss exhaustion.

24. Summarize all airport related noise impact considerations: flight movements on runways and in air beside towers, plane warm-ups and taxiing, ferry horn blasts, rolling luggage noise annoyance concerns, post maintenance runups, helicopter night flight noise propagation and reflection, etc.

25. Summarize order of magnitude of existing Q400 noise considerations eg. takeoff noise at bedroom windowpane ranging 75dBA, ferry noise impact during sleeping hours ranging 64 dBA at bedroom windowpane, etc

26. Please assess impact of constant roar from multiple planes warming up or rolling around simultaneous at any time of day, and impact of planes lining up at end of runway pointed toward residents in May 2012 (photos available) eg. there is sometimes a noise peak as plane turns a corner.

27. Quantify number of bedroom windowpanes which no longer meet MOE interior noise criteria of NEF=0.

28. Confirm which waterfront buildings are Class 2 vs Class 1 under MOE noise criteria. At what tower elevation or storey do residential units change from Class 1 to Class 2. (Eg. in 2002, I used to sit on bench after work beside ferry slip and hear my pulse over the faint dull white noise of Gardiner Expressway. This indicates that 34 Little Norway Crescent and adjacent park would be assessed at Class 2. Any units facing Gardiner Lakeshore would be Class 1. Please confirm for Dec 2013 report.)

29. Document the geographical range and statistical likelihood of the Actual 0 NEF Contour location. Need to look at external face of buildings as waterfront towers do not have noise protection or HVAC capable of supporting AC during summer months and are designed with large south facing bedroom windows to open 24/7 to cool lake breezes eg. takeoffs audible at Queen Street.

30. Confirm max vibration criteria to avoid wakeup from rattling windows (airborne vibration) or ferry operation (waterborne vibration transmitting to bedroom floor).

31. Provide practical guide for residents in obtaining, using and understanding noise meters and vibration meters.

32. Document ambient (ie. background) noise as it varies across the waterfront, at targeted elevations, over the 24 hour day. The ambient noise must exclude any airport impact related noise ie. desirably excludes ferry conveyance system so that full cumulative impact of airport operation can be understood.

33. Please quantify modeled data for Leq (1), Leq (8), so that City can actually look at the noise impacts (not as shown in workshop presentation). Also need to breakout Leq (evening) for MOE Class 2 areas so that City can evaluate appropriateness of as-constructed waterfront building materials to withstand airport noise.

34. Document in report that residents currently do not have possibility of 8 hours of sleep due to approved slot schedule, curfew violations, helicopter movements, airport maintenance construction activities during sleeping hours, and ferry operation and testing schedule (which only guarantees 3.75 hours quiet prior to commencement of ferry testing at 4am).

35. Please include graphs and clearly document in Dec 2013 report the relationship between passenger loading, fuel weight by destination, and the resulting noise impact at various tower elevations. An example comparison table, including the current typically empty new flight runs, would be helpful.

36. Please assess the volume of noise pollution which is not benefitting anyone eg. a noise event assumed for Q400 flying into Toronto with 10 people and departing with 20 people. The value of each unit of noise pollution supporting the under-capacity Q400, affecting all waterfront stakeholders, is low. This information will assist in establishing noise efficiency benchmarks for noise impact vs slot count.

Air Pollution Health Impact Technical Work

37. Please document assumptions with respect to recovery timeline of US Mid-West, which is the primary source of Toronto air pollution.

38. Please obtain samples of film forming on area yachts and balconies to confirm human safety for children's toys, and also cleaning requirements for external brickwork and various HVAC systems.

39. Please document health and safety issues related to the transportation and handling of various fuels.

40. Please provide a simulation of the anticipated impact on surrounding residential towers and areas should there be a massive aircraft fuel explosion (of a truck, an underground tank, an aircraft or any combination thereof) for each Health scenario eg. which tower windows will implode with air pressure from blast.

41. Please document meteorological statistics for airport, including applicable stats relevant to health impacts. For example:

(a) Wind direction re plumes
(b) Wind speed re distance
(c) Updrafts on water surface
(d) Barometric high/low pressure
(e) Temperature
(f) Calm reflective water surface

Traffic Health Impact Technical Work

42. Please set up stakeholder meeting to discuss Transportation Study immediately. The Transportation Study has not yet been completed or issued, and is critical in completing the Health Study.

43. Please provide summer grid lock operating assumptions, and discuss ambulance access to Little Norway Crescent.

44. Further to the above comments regarding the 3 Health Scenarios presented Oct 9, 2013, please clarify the following for each scenario:

(a) Passenger modal split breakdown
(b) Number of employment trips to and from airport including modal split
(c) Total trips in each direction on each leg of Bathurst/ Queens Quay intersection.
(d) Assumed volumes of idling on Lakeshore boulevard caused by increased southbound movements with trip ends at airport.
(e) Assumed volumes of taxis idling on Eireann Quay.
(f) Assumed circling passenger traffic looking for airport parking and effects of idling traffic inside Bathurst Quay eg. south end of Little Norway Crescent
(g) Assumed number of employee parking trips and location of parking.
(h) Maximum number of trips assumed on east leg of Bathurst/ Queens Quay intersection, including modal split, in conformance with Queens Quay Revitalization EA Study document and appendices.
(i) Assumptions for additional circling tourist traffic at Bathurst/ Queens Quay intersection destined for Ripley Aquarium (traffic not considered under Queens Quay Revitalization).
(j) Road and transit infrastructure assumed for each scenario eg. post-Queens Quay Revitalization road capacity, transportation network configuration, and transit service frequency and capacity assumptions

Report Disclaimers

45. Please issue each report with professional seal eg. engineer's stamp, signed and dated.

46. Please label each report 'Very Preliminary Draft'.

47. Please include a statement on the introductory page of the Dec 2013 report in large bold font size which states: "Work covered by this document was commenced in October 2013 to meet a November 2013 report deadline, established by Council in advance of a December 2013 Council vote on whether CS100 jets should be approved at the Island Airport. This report deadline does not allow for some standard project protocols to be carried out. Some fundamental engineering practices were either partially completed or otherwise not carried out in order to meet the deadline established for the study team. Some of the technical information presented herein may not be legally supportable under 'balance of probabilities' testing and/or under 'fair and reasonable' testing. "

48. Immediately following the above, please include any disclaimers which Golder needs to insert in order to protect themselves corporately, keeping the onus of responsibility for the report contents and findings solely with the City of Toronto. Please also include in the report all disclaimers which Golder felt compelled to include in their approved professional services proposal.

49. Please explicitly state on the introductory page of the report that the contents, opinions, and findings of the Dec 2013 report are exclusively those of the City of Toronto.

50. Please include in the report the typical flowchart showing study steps, and identify the steps where shortcuts in methodology or process was necessary in order to meet the unrealistic Council deadline for Dec 2013.

Council Decision Items May 7, 2013

Porter Jet Proposal

Council Item No.	Council Action Item	Technical Consultant Input Required
1	confirm interest of Signatories in responding to request	
2	confirm protection for General Aviation	
3a	confirm approval process to amend Agreement	
3b	confirm if possible to remove jet exclusion while maintaining current noise limitations	
3c	confirm potential economic impact/opportunity with the request	x
3d	confirm if changes in runway end safety areas due to proposed legislation	x
3e	review potential noise, environmental, traffic/congestion impacts including impacts to Queens Quay revitalization	x
3f	review other factors that should be considered by Exec Committee and Council	x
4	consult with TDSB	
5	consult with Waterfront Toronto and TRCA	
6	consult with GTAA, Nav Can, aviation stakeholders	
7	review precendents of jets on waterfront and cost/benefit	x
8	increase the 2013 Operating Budget for purpose of this Phase 1 evaluation	
9	secure additional funding commitment for Phase 2 evaluation	
10a	evaluate the extent to which existing commercial and general aviation operation conforms to current terms of Agreement	x
10b	evaluate overall passenger and airport capacity per existing Agreement	x
10c	establish methodology for evaluating the airport within broader planning policy framework	x
10d	evaluate airside and landside constraints of airport infrastructure relevant to expansion	x
10e	evaluate proposal with respect to physical and operational requirements of City infrastructure, compatibility with NEF Contour process, approach surfaces, airspace, marine exclusion zone	x
10f	review economic impacts on maritime, aviation, other users, manufacturing sector	x
10g	conduct an initial public consultation meeting with respect to proposal	
10h	bring forward information, past studies deemed appropriate	x
10i	evaluate impact to emergency services navigating Western Gap	x
10j	evaluate implication of Open Skies agreement	
10k	evaluate implications for Film Port and film industry	x
11	exclude expansion into parklands, protect trees, bird sanctuary, Hanlan's swimming beach	x
12	exclude material encroachment into Western Gap shipping channel	x
13	exclude changes to existing noise guidelines for individual planes or provisions for NEF contours currently in place	x
14	enter into sole source agreements for external consulting services	
15	commission a third party fairness monitor	

Study Completion Matrix

Council Decision Items May 7, 2013
Porter Jet Proposal

Council Item No.	Council Action Item	Study Streams						Cumulative Effects			Completion Status
	Technical Consultant Input Required	Aviation (noise, safety, infrastructure)	Economic Impacts	Land Use and Community Impacts	Marine Navigation, Coastal, and Habitat Assessment	Public Health Impacts	Transportation Impacts	Existing Concerns (May 2012) [Current under-capacity Q400 operation]	Projected Concerns [Incremental increase to meet fully loaded Q400 operation]	Proposed Concerns [Incremental increase to meet eventual fully loaded CS100 operation]	
3c	confirm potential economic impact/opportunity with the request	x	x	x		x	x	x	x	x	Incomplete
3d	confirm if changes in runway end safety areas due to proposed legislation	x			x			x	x	x	Incomplete
3e	review potential noise, environmental, traffic/congestion impacts including impacts to Queens Quay revitalization	x		x	x	x	x	x	x	x	Incomplete
3f	review other factors that should be considered by Exec Committee and Council							x	x	x	Incomplete
7	review precendents of jets on waterfront and cost/benefit	x	x	x	x	x	x				Incomplete
10a	evaluate the extent to which existing commercial and general aviation operation conforms to current terms of Agreement	x		x	x	x	x	x	x		Incomplete
10b	evaluate overall passenger and airport capacity per existing Agreement	x	x	x			x	x	x		Incomplete
10c	establish methodology for evaluating the airport within broader planning policy framework	x	x	x	x	x	x	x	x	x	Incomplete
10d	evaluate airside and landside constraints of airport infrastructure relevant to expansion	x	x	x	x	x	x	x	x	x	Incomplete
10e	evaluate proposal with respect to physical and operational requirements of City infrastructure, compatibility with NEF Contour process, approach surfaces, airspace, marine exclusion zone	x	x	x	x		x	x	x	x	Incomplete
10f	review economic impacts on maritime, aviation, other users, manufacturing sector		x	x	x		x	x	x	x	Incomplete
10h	bring forward information, past studies deemed appropriate	x	x	x	x	x	x	x	x		Incomplete
10i	evaluate impact to emergency services navigating Western Gap				x	x				x	Incomplete
10k	evaluate implications for Film Port and film industry	x	x	x			x		x	x	Incomplete
11	exclude expansion into parklands, protect trees, bird sanctuary, Hanlan's swimming beach	x		x	x	x					Incomplete
12	exclude material encroachment into Western Gap shipping channel				x		x			x	Incomplete
13	exclude changes to existing noise guidelines for individual planes or provisions for NEF contours currently in place	x		x			x	x	x	x	Incomplete
Horizon Years to be reviewed											
Year 2012	(year of maximum road traffic to date)	x	x	x	x	x	x	x			
Year 2017	(proposed year of jets implementation)	x	x	x	x	x	x	x	x	x	
Year 2031	(census planning year, prior to lease end year of 2033)	x	x	x	x	x	x	x	x	x	

Sent: Tuesday, October 15, 2013 4:10 PM
To: sgower@toronto.ca
Subject: Health Impact Assessment
Attachments: Airport Expansion.doc

I attended the Health Impact Assessment meeting on Oct 9th on behalf of Harbourside Co-op. Please find attached notes I prepared to collect my thoughts previous to the meeting.

Health Impact Study

Community Profile:

- established mid 1980's
- 4 housing co-ops
- 2 large Toronto Community Housing developments
- 4 condos since the 80's
- significant population whose housing is rent geared to income or affordable housing
- most housing has one to three bedroom units - a few have four bedroom units
- few amenities – Community Centre, Schools, daycares, bookmobile on Friday night. One corner store plus a community food group linked to Foodshare
- mixed ages – many families - profile most closely resembles St Laurence area (a model of urban development)
- Little Norway Park is within the Community, Coronation Park to the west and the Music Garden to the east. Preschool water pool and playground is by the lake directly across from the airport and beside the ferry loading area. Playing fields are beside Eirean Quay

Current Situation:

- airport has expanded greatly since 2006
- traffic and parking has become intolerable situation
- parents walked the children to the school behind a large banner to ensure their safety
- area is used recreationally by many groups – in the summer there are many runs and events including extra traffic for the Carribean Festival, Fort York, Ontario Place, and the Exhibition (community understands that this use is for the benefit of Torontonians). The area is overwhelmed when these events occur and the situation becomes intolerable with the addeD airport traffic
- regularly smell airplane fuel in the park and in some buildings and the I've been told the school
- cars picking up passengers use our streets for pick up areas. Have cars idling and blocking intersections. Private limos park in the area and idle while waiting for their pick ups.
- we wonder what we are currently breathing – black carbon, small and large particulate? and what is it doing to us?
- Visitors and staff at the airport regularly park on our streets which is designated short use except for parking pass holders. It is harder for them to get parking now.
- The noise is very loud at times, to the extent of having to close windows. Many do not have air conditioning.
- Some of the older buildings do not have air conditioning or sophisticated air filtration systems. We breathe the exhaust and fumes
- the preschool playground gets diesel fumes from the ferries and the vehicles loading
- there has been almost constant construction at the airport – ferry docking, new terminal s and now the tunnel. We have trucks going past the school and Community Centre regularly through the day along with double fuel tanker trucks. They create noise and pollution. It has been a constant stressor

Expansion and Jets:

- this would bring more construction to the area – not only for the runway but in all probability

there would have to be an expansion of the terminal to accommodate extra security and customs
- this would bring more noise and more pollutants and risks at the crossing at Queens Quay West and Eirean Quay.
- Larger planes would bring more passengers which would make our intersections even more dangerous. The traffic often does not notice the stop signs and you only cross the street when they are stopped.
- it would bring more pollution from vehicles
- jet fuel would bring its extra pollution
- if the runway was longer would the Q400's then be able to carry more fuel and passengers and would this ad to the noise and pollution with a heavier plane.
- The community is at its wits end – the psychological stress is enormous

The City and the TPA has never communicated to us the health implications of the current situation. The continued adding of slots at the airport has continued with no acknowledgment of the community. We are people. We breathe, We raise families. Many in the community cannot afford to move to another place. Most would not want to. It is our home.
We need to know what is happening to us now and what any expansion would mean. A quick study does not address any of these issues.

To: "sgower@toronto.ca" <sgower@toronto.ca>
Date: Wednesday, October 16, 2013 4:45 PM
Subject: Fwd: From the Guardian: Study links low birthweight to air pollution and traffic

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This excerpt is from an article in The Lancet of Respiratory Medicine and presented by Sarah Bosley in the Guardian Newspaper today. The Lancet is a famous and up to date medical publication that is of immaculate worldwide repute.

Cheers,

Begin forwarded message:

From: No reply <email.form@guardian.co.uk>
Date: October 16, 2013 at 9:10:33 AM EDT
To:
Subject: From the Guardian: Study links low birthweight to air pollution and traffic
Reply-To: No reply <email.form@guardian.co.uk>

thought you might be interested in this link from the Guardian: Study links low birthweight to air pollution and traffic

For every increase of 5 micrograms per cubic metre in exposure during pregnancy, risk of low birthweight rises by 18%

Sarah Boseley, health editor

Tuesday 15 October 2013

The Guardian

http://www.theguardian.com/science/2013/oct/15/study-air-pollution-traffic-low-birthweight

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Babies born to mothers who live in areas with air pollution and dense traffic are more likely to have a low birthweight and smaller head circumference, according to a large European study.

The researchers, who included a team from the UK, found that babies were smaller even in areas with relatively low levels of air pollution, well below the limits considered acceptable in European Union guidance.

For every increase of 5 micrograms per cubic metre in exposure to fine particulate matter during pregnancy, the risk of low birthweight in the baby rose by 18%.

Although they cannot establish from this research that air pollution is the cause of low birthweight, the authors of the study, published in the Lancet respiratory medicine journal, believe the link is strong enough to demand action.

"Our findings suggest that a substantial proportion of cases of low birthweight at term could be prevented in Europe if urban air pollution, particularly fine particulate matter, was reduced," said lead author Dr Marie Pedersen from the Centre for Research in Environmental Epidemiology in Barcelona.

Low birthweight in babies is a concern, because it often predicts poorer health as children and later as adults. A small head circumference could indicate problems with neurodevelopment.

The research pooled the results of studies from 12 countries in Europe, involving more than 74,000 women who gave birth between 1994 and 2011, living in a range of different settings, from inner-city to semi rural. One of the biggest cohorts, involving 11,000 women, was from Bradford.

Dr John Wright, director of the Bradford Institute for Health Research and chief investigator of the ongoing Born in Bradford study which is following the lives of more than 13,000 families, said the findings allowed for other aspects of the women's lives that could have led to smaller birthweight babies.

"There tends to be social patterning – poor people tend to live in inner-city areas where there is more road traffic and poorer diet," he said. But the study had achieved "very rich data collection" on the lives of the mothers, and was able to allow for other issues that could affect the baby's development, such as smoking. Mothers who smoked had a higher likelihood of a low birthweight baby than those who did not, but only a minority smoke, whereas everybody is affected by air pollution in the area where they live.

Wright said the study made the case for regulatory intervention. "You can stop smoking and drink less alcohol and get more physical exercise. Pregnant women do this really well. But for air pollution there is nothing much you can do. This is a classic example of public health policymaking that needs to happen."

In a commentary with the paper, Professor Jonathan Grigg, from Queen Mary, University of London, said: "Overall, maternal exposure to traffic-derived particulate matter probably increases vulnerability of their offspring to a wide range of respiratory disorders in both infancy and later life."

Difficult decisions needed to be made, he said. "The introduction of the low emission zone in London, UK, has had little effect on concentration of particulate matter, although the vehicle mix has been altered. UK policymakers have shied away from radical solutions to the issue, such as changing diesel-powered black cabs (which contribute 20% of London's locally generated particulate matter) to cleaner petrol-powered alternatives."

If you have any questions about this email, please contact the theguardian.com user help desk: userhelp@theguardian.com.

To: "sgower@toronto.ca" <sgower@toronto.ca>
Date: Friday, October 11, 2013 7:53 PM
Subject: HEALTH PROBLEMS caused by PORTER Airlines
CC: "info@nojetsto.ca" <info@nojetsto.ca>

Dear Ms Gower,

I am writing to you as a resident of Toronto Waterfront who have serious concerns about the proposal by Porter Airlines to expand its operations at Billy Bishop airport, and to increase its fleet with the so-called unproven "whisper jets" in order to save its business from another bankruptcy.

Since the airport reopened some years ago, we have suffered the noise and the pollution created by the increased flights from this airport, with the airlines operating at very early hours in the morning and keeping its engine testing sometimes late until the night (11:00pm) without any respect for the residents' tranquility and quality of life.
We have been forced to live with all our windows closed throughout the year, to avoid hearing the noise and let the fuel odor entering our premises, in winter as well as in summer, and we had to suffer the lack of renewed fresh air that this situation imposed on us, while having to live continuously in the same recirculated air inside.

Now we are feeling the effects of such a pollution (noise and air combined) on our health. We have seen the consequences of it on our more difficult breathing, higher blood pressure and brain functions (stress and nervousness).
These very toxic effects have now been confirmed by the recent study that has been made by prominent researchers in the USA (confirmed also for Canada), who have demonstrated the extent of air traffic noise and pollution on people who live nearby an airport, especially with an increase in cardiovascular diseases, heart attacks or strokes, etc...
Please see the link hereunder, which relates to a news presentation by the CBC itself on this particular subject.

http://www.cbc.ca/news/health/aircraft-noise-tied-to-higher-heart-disease-risk-1.1931092

I understand that you are gathering information on the health effects of airport noise and air pollution (related to the proposal to extend the runway and allow jets into the Billy Bishop airport).
I hope that you will take into consideration my present letter of concern, and the undeniable results of the research made by the American scientists with regards to this specific subject.

Thank you in advance for your attention.

To: <sgower@toronto.ca>
Date: Wednesday, October 23, 2013 12:54 PM
Subject: Toronto Airport Expansion - A concerned resident.

Dear Stephanie Gower,

I am writing to you as a concerned resident of the community surrounding the Toronto Island Airport.

I feel the expansion plans are an incredibly cynical and short sighted development proposal to benefit only a small group of businessmen.

The airport expansion will mar the waterfront of Toronto, with not only air pollution but also noise pollution. Traffic congestion will increase and the storage of jet fuel on Toronto Island is also an issue.

The impact will be completely negative on the residents, community and tourists who visit the waterfront of Toronto.

Pearson airport (an the majority of international airports of the world) are built at a substantial distance from residents, homes, schools and communities for a reason.

As a proud resident of Toronto, it saddens me that such proposals are considered as improvements to the quality of life in this city. The Toronto waterfront and island is an under-developed area of the city that holds so much more potential for outdoor friendly activities. A full-scale jet airport is not healthy for tourists or residents, and will only damage the city's overall liveability & image.

sincerely,

Subject: FW: Submission to HIA Island Airport Jet Proposal

>>> 10/15/13 4:48 PM >>>
Hello,
I oppose the introduction of jets at the Toronto Island Airport and the lengthening of the runway. As a resident of the waterfront, I have concerns about the added noise and air pollution and increased traffic to the airport creating more hazards for pedestrians and cyclists.

I am outraged that Porter is attempting to revise the terms of their previous agreement with the city to include the use of jets at the Island Airport.

Please feel free to contact me if you require any further information.

Thank you,

Sent: Wednesday, October 02, 2013 2:45 AM
To: mcampbe2@toronto.ca; Papageorgiou, Agni; sgower@toronto.ca
Cc: Councillor Vaughan@toronto.ca; marchese-qp@ndp.on.ca; olivia.chow@parl.gc.ca;

Subject: will you be looking retroactively...

Look – 3 years ago and counting (in regards to the article below).

These issues have not been addressed – ever. Will you please recognize that there is already a major health and environmental problem surrounding the Island Airport. Any baseline study has to start from pre-2006 as there are huge air and noise pollution factors that were created when Q-400's were unilaterally given clearance. The TPa's own paid for Environmental Assessment stated (on page 5 and 31) that anyone living anywhere near an airport that had Q-400's required tripled-glazed windows and individual H/VAC units equipped with HEPA filters. The residential neighbourhood immediately surrounding the Island Airport is made up of CityHomes, Federal Co-operative Housing and Island residents. These homes were built either before or immediately after the Tripartite Agreement, in good faith - when an agreement meant something. None of these homes have the 'mitigating factors' that would allow people to live near a commercial airport. Noise rumbles through the double-glazed window and a bug screen is no prevention from carcinogenic particulate matter. Before anyone even considers jets down here on the clean, green waterfront, the degradation that already exists from what the TPA is getting away with needs to be stated and dealt with for the sake of the entire waterfront.

If this really is an exploration of the detrimental health impacts, pay attention to the detrimental health impacts that already exist. Help us. We are citizens, tax payers, voters, human beings and the excessive noise and air pollution that is already generated from this airport in the middle of a residential neighbourhood is unacceptable.

If you are incapable of helping, please forward this message to someone who can.

Environment & Health Concerns Raised As Operations Set To Increase At Island Airport

03/08/2010 06:47 AM Story and images by Shawne McKeown

***CityNews.ca** looks at some issues surrounding expanding operations at Billy Bishop Toronto City Airport in a three-part series.*

As the recent opening of the new $50 million terminal at the island airport heralds in a new period of increased flights and improved service for travelers, some local residents believe their concerns about the environmental and health impacts of the expansion are being ignored and describe themselves as “neighbourhood canaries”.

Toronto Public Health officials have also raised concerns about air quality and water safety and claim they haven’t received sufficient answers from the federal agency that operates the downtown runways.

Brenda Roman, who has lived at the waterfront for nearly 25 years, was recently diagnosed with an obstructive lung disease called bronchiectasis and is worried about the potential health effects of increased pollution.

“We are especially affected by the airport down here on Bathurst Quay,” she said.

Local family physician Dr. Pieter Jugovic, who’s spoken out against the airport expansion in the past, offered a grim prediction.

“I have every reason to believe that people living in this neighbourhood can expect lives to be shortened because of what’s going on,” he said.

The Toronto Port Authority (TPA) announced last December its plans to nearly double the number of available slots at the island airport to 212 from the current 120 and it’s reaching out to the market for more commercial carriers. The new terminal opened to passengers Sunday.
In an effort to offset increased pollution, TPA president and CEO Geoff Wilson said facilities at Billy Bishop Toronto City Airport (BBTCA) are virtually all powered by renewable energy. He also noted the Q400 plane used by his sole commercial tenant, Porter Airlines, is considered an “environmentally sound aircraft compared to what’s being operated today.”
“Environmentally, this is going to be a long, long mission for us and we’re very happy to do it,” he said.

The TPA has dedicated $1 million to create protective islands and fish habitat wetlands at Tommy Thomson Park.

According to Toronto Public Health, there has been no comprehensive environmental assessment conducted since operations ramped up at the airport in 2006, when Porter started offering commercial regional service.
The TPA said it is currently conducting an extensive air quality assessment and plans to share its findings with the Board of Health.

“[The Toronto Port Authority has] had to do aspects of an environmental assessment … through the federal government, but it’s largely had to do with the physical structure of the terminal itself when they expanded that,” Monica Campbell, manager of the environmental protection office of Toronto Public Health, told **CityNews.ca**.
“They have done some studies prior to 2006, but certainly they have not done, to our knowledge, a comprehensive air quality study and those were some of the recommendations that were made by the board at its January meeting.”

The Toronto Board of Health issued six recommendations for the TPA at a meeting on Jan. 18, at which several concerned waterfront residents made deputations. The board requested an air quality assessment. It also suggested the TPA provide a full list of chemicals used at BBTCA and that Toronto Water test water pumped from the airport's holding tanks into the city sewer system for possible traces of deicing fluids, particularly ethylene glycol, and other cleaning chemicals.

Representatives from the Greater Toronto Airports Authority (GTAA) attended that meeting and outlined that agency's methods of monitoring air quality and containing and recycling chemicals at Pearson International — a plan Campbell described as "progressive".
Campbell said there were no representatives from the TPA at that meeting. Ken Lundy, director of BBTCA, said the TPA wasn't invited, but Campbell said the federal agency was given sufficient notice of the gathering.

"We don't know what happens at Toronto city centre airport," she said. "We would wonder if, because of the proximity of the runways to the water, we would wonder if there's movement of the deicing fluid into the water and would be somewhat concerned about the aquatic impact."

CityNews.ca contacted the TPA for comment on chemical containment. The agency hasn't yet responded to that request.
"As far as deicing goes, that is all done in areas that have full containment so there is definitely no runoff on those locations," Porter Airlines spokesman Brad Cicero said.

Toronto's medical officer of health, Dr. David McKeown, issued an October 2009 report claiming available information on operations and environmental activities at BBTCA were outdated. The report also claimed requests by Toronto Public Health to obtain up-to-date data from the TPA went unanswered.

The TPA announced some environmental initiatives, including efforts to reduce aircraft emissions and idling enforcement for ground vehicles, in a Nov. 13, 2009 letter in response to Dr. McKeown's report. According to Campbell, that was the TPA's last official correspondence with the city's Board of Health.

"Environmental policy is very important to us," Wilson said. "It's not just about we want to look like good neighbours, we have real opportunities here to really do things to ensure that we are a good and functioning neighbour."

shawne.mckeown@citynews.rogers.com

BQNA | Bathurst Quay Neighbourhood Association

October 21, 2013

Stephanie Gower
Toronto Public Health

Dear Dr. Gower:

The Bathurst Quay Neighbourhood Association BQNA is made up of building representatives living between Stadium Road and Spadina, and from Lake Shore Boulevard south to Lake Ontario. The purpose of the BQNA is to represent and assist in improving the quality of individual and community life in this neighbourhood.

As a representative democratic community organization, the BQNA is a key point of contact for residents and for the media, the City of Toronto, the Toronto Port Authority, and other organizations on issues relating to our neighbourhood
The BQNA executive is made up of reps from each of the neighbourhood buildings. They are:

Gil Stephanson – South Beach
Will Molls – Harbour Channel
Heino Molls/Tony Makepeace – Harbourside
Rick Persich/Marisa Diaz- Winward
Andrea Jackson – Bishop Tutu
Joan Prowse Diona Diobaisse – Arcadia
Bev Thorpe – Atrium
Tim Egan/Joel Rochon – King's Landing

As elected representatives for the community we have made deputations to City Council and also have participated on the Toronto Port Authority's Community Consultation Committees around airport expansion. I participated in the HIA workshop on October 9. In addition to the comments I made there and submitted to Danny on the written comment form, this letter indicates strongly that any further expansion of the airport will have detrimental effects for the community as a whole and the individuals who make up this vibrant mixed income and demographic neighbourhood.

There are many factors that contribute to a person's health. I am pleased that you are using the WHO's definition of health that includes mental and social well-being in addition to the physical and more obvious signs of disease and infirmity.

This community has not been listened to adequately about our concerns over airport expansion on our quality of life and this feeling of powerlessness and despair is having a definite negative effect on our health.

I spent yesterday hearing from residents at Winward Co-op, those citizens that live the closest to the airport. Many are confined to wheelchairs and require assisted care. They are worried about their future well being as their ability to have air-flow to their apartments due to airport noise, affects their breathing and makes it difficult for those working from home to use their voice-recognition systems on their phones to communicate with their clients.

Many take wheel-trains to work and are concerned that the increasing traffic congestion will make it difficult for these and other service vehicles to attend to them. Those who are fortunate to have assisted vehicles to drive themselves places, are finding, more and more, the handicapped spaces in front of their building taken by those using the airport, where there is no designated handicapped parking. These are just a few examples of how this building is affected directly. I have videotaped five of these residents and will supply a video presentation to you as well as to the TPA when we make public deputations.

From what I understand, the HIA is considerate of particularly vulnerable people that include those that are disabled, have lower socio-economic status, suffer from chronic respiratory disease, are elderly and are children, toddlers, and infants. Our community has a very high number of these specific demographic groups living here.

The stress level of these individuals (and everyone living in this neighbourhood) is adversely affected by the increase in airport traffic, both in the air and on the ground. I hear countless stories of families who do not receive visitors because there is nowhere to park, and where overnight guest receive parking tickets because they have stayed more than three hours parked on the street. The noise of the planes that begins at 5:30 a.m. with the ferry start-up and goes on past 11 o'clock at night sends our residents to their telephones and computers to leave complaints to the TPA's noise and construction complaint line. These concerns are met with disclaimers and often out right denials from the TPA that any activity took place during the "quiet" times meant for sleeping.

Our economic livelihoods are deeply affected by our inability to sleep and to concentrate and communicate during the airport's operating hours. I personally have lost valuable and productive work time representing my community on this issue. Right now I am feeling stressed writing this letter, as I am making myself late for work.

At the HIA I made a few notes about the present study that I want to note here as concerns. They include:

-The HIA's scope excludes health impacts of the following:

- Ground noise of traffic (especially taxis) moving to and from the airport, fuel deliveries to and from the airport
- Increased nighttime lights at the airport and surrounding areas
- Effect on water quality and the waterfront in general, in particular de-icing and fuel run-off into our water system
- Effects on wildlife in the area
- Disconnection from nature and green space

Other concerns include:

-The speed of the process. I heard from Toronto Public Health and Golder reps at the HIA workshop that the demand for a council vote in December does not allow adequate time to properly evaluate the health impact on people living in the area. What I heard is that normally a study of this magnitude would take at least a year, not the few short months you have been given

-Lack of clear reporting by the TPA on the number of aircraft movements currently and what the anticipated growth will be in the future.

-Use of existing noise and air quality studies that were commissioned by the TPA and the airline industry. For example using background information from a 2009 Jacob's Noise Study (on which I participated as the BQNA rep) that lacked sufficient community input. We received meeting minutes and draft reports without adequate time to review them. When the results presented at a public meeting, they were numerous questions and concerns regarding their biased in favour of the airport.

-Approval of the amendment without adequate testing of the CS100 for noise and safety levels at the location where the planes will be flown and with anticipated passenger loads.

-Disregard for the democratic process that put the tri-partite agreement in place to protect people living in a community from health affects of an airport.

The BQNA therefore urges the Toronto Public Health to instruct the Toronto City Council not to vote on the expansion plan as envisioned. The reasons are so stacked against it. Not only will our health suffer, our livelihood will too.

Sincerely,

Joan Prowse
BQNA Representative
680 Queens Quay West, Toronto M5V 2Y9

Sent: Tuesday, October 01, 2013 6:30 PM
To: 'Stephanie Gower'; 'Christopher Dunn'; 'Monica (Public Health) Campbell'
Cc: Papageorgiou, Agni;
Subject: RE: Windward Coop registration / Oct. 9 Health Impact Meeting

Importance: High

October 1, 2013

and Ms. Stephanie Gower:

Thank you for expanding on some of our Federation of Canadian Naturist and Co-op questions phrased so well by . We are glad the HIA takes into account a range of factors such as "physical environment, and social environment," but the City of Toronto who permanently sanctioned our clothing-optional beach at Hanlan's Point after three years of study, apparently did not realize the economic, social, physical and wellness importance of a clothing-optional beach to naturists using Hanlan's for both residents and tourists escaping the rigors of urban life. If they had, they would have contacted the Federation of Canadian Naturists with its almost 18,000 members across Canada for our input into public workshops. Where and how were those workshops conducted and by whom?. The Melbourne "Wellness" study tenets have been incorporated into a multitude of parks, world-wide. The importance of clean green space and waters for recreational purposes and its impact on human psychological, physical health, and well-being are unchallenged and have now been backed up with empirical data! As a woman activist for naturism and for the environment over the past 46 years, I can assure you of the utmost importance of maintaining a clothing-optional beach with clean air, water and sands in the middle of Toronto! I have sat on the Vancouver International Airport's Environmental Committee for the past 7 years. The Federation has compiled a list of concerns which we need addressed. At the very least, we should be included in the October 9 workshop. Naturists are the original wellness-promoting individuals on our planet. Our President, Mrs. Karen Grant will be contacting you before October 4, 2013. Her letter will include a list of our concerns which we deserve to have addressed in your October 9, 2013 HIA workshop. Will you please advise us as to what language will be used in the workshop—English or French. Thank you in advance.

Thank you so much for forwarding this series of e-mails and the following questions and answers from Stephanie Gower, , regarding the Health Impact Assessment to "explore the potential impacts of expanding service at Billy Bishop Airport (BBA)." has asked the following questions and the FCN questions to Ms. Gower follows each:

1) Why was the public not invited to the health impact assessment workshop?
Response: **If "An important part of HIA is to identify whether there are any specific groups of people who might be more vulnerable than others," why were recreational users of Hanlan's Point Beach not contacted through the Federation of Canadian Naturists? Why is the**

Federation not on your list of public stakeholder groups? It needs to be and at the very least, if we missed the public consultation meetings, as it appears that we have, when and how were they advertised and how does the City determine who will go on its stakeholder lists? If the deadline for signing up for the workshops is the 4th, why are we being refused entry by the 30th of September? If those public workshops were through invitation only, why was a nearby co-op and Canada's major naturist recreation group, the Federation of Canadian Naturists not included?

2) Who are the invitees and what criteria were they chosen by? **And, we also want to know by whom they were chosen? And, why are they not public?**

3) What are the processes to be applied in this health impact assessment workshop? **Thank you for the contacts. Perhaps they could be sent in a format that I could open.**

4) Can the public or additional members of organizations attend as observers? **There is always room for one more when it means transparency. Why the secrecy?**

5) Will the workshop be recorded in video and audio, and be made public? **You have said that the proceedings will be recorded but not whether you will use electronic or digital means. And, nothing replaces an open microphone in order for everyone to hear what other members of the public are saying.**

6) May we allow Windward Coop and Federation of Canadian Naturists to attend as key stakeholders? **Both of these organizations are key community stakeholders who were not invited. It is now up to you to remedy that glaring oversight.**

Thank you most kindly,

Judy Williams,

Government Affairs Officer of the FCN

Dear and Ms. Gower:

Thank you for expanding on some of our questions phrased so well by We are glad the HIA takes into account a range of factors such as "physical environment, and social environment," but they seemed to have missed the importance of clothing-optional Hanlan's Point Beach to the naturists using Hanlan's as both a residential and tourist escape from the rigors of urban life. The Melbourne "Wellness" study has been incorporated into a multitude of parks, world-wide. The importance of clean green space and waters for recreational purposes and its impact on human psychological and physical health and well-being are unchallenged and have now been backed up with empirical data!

From: Stephanie Gower [mailto:sgower@toronto.ca]
Sent: October 1, 2013 12:38 PM
To: ; Christopher Dunn; Monica (Public Health) Campbell
Cc: Judy Williams; Agni Papageorgiou;
Subject: Re: Windward Coop registration / Oct. 9 Health Impact Meeting

Dear ,

Thank you for your interest in the Health Impact Assessment that is being conducted to explore the potential impacts of expanding service at Billy Bishop Airport. I understand that you spoke with Carol Mee earlier today and as a follow-up to that conversation I am responding to you on behalf of Toronto Public Health.

This email provides some background information about the Health Impact Assessment (HIA) as well as provides answers to the questions you asked in your email.

What are the processes to be applied in this health impact assessment workshop?

Health Impact Assessment (HIA) is a well-defined process that has been documented by the World Health Organization and others. It starts from understanding that a person's health is determined by a wide range of factors including their physical environment, their social environment, their income and employment considerations, their genetics, healthy child development, and others.

Health Impact Assessment looks at the decision to be made (in this case, whether the airport should be permitted to expand) to identify if making that choice will affect any of these factors. For any of these factors that are affected, the HIA should describe what this means for the health of the population. An important part of HIA is to identify whether there are any specific groups of people who might be more vulnerable than others. In the case of the airport expansion, for example, children's health has been raised a number of times.

If you would like to see how the process was applied to another decision in Toronto, please see http://www.toronto.ca/legdocs/mmis/2011/pw/bgrd/backgroundfile-37363.pdf. If you would like more information about how Toronto Public Health does HIAs please see our HIA Framework (http://www.toronto.ca/health/reports/pdf/draft_hia_framework.pdf). If you would like further details please see resources from the World Health Organization (http://www.who.int/hia/en/) and the Canadian National Collaborating Centre on Environmental Health (http://www.ncceh.ca/en/professional_development/ncceh_workshops/health_impact_assessment).

Why was the public not invited to the health impact assessment workshop?
Who are the invitees and what criteria were they chosen by?

The focussed workshop being planned by Toronto Public Health is to gather community and public health experts to explore in detail the health concerns related to the proposed airport expansion. This includes discussion of concerns raised during the public consultations that were organized by the City of Toronto. Health-related concerns that were raised during those public consultations were documented and will be considered in the Health Impact Assessment. There is still an opportunity to provide input through the City's consultation website at http://cityoftoronto.fluidsurveys.com/s/BBTCA/

The number of participants at this workshop is limited in an effort to balance representation from a range of community and public health organizations with creating an opportunity for focussed and detailed discussions to explore the issues that the communities and public health experts are concerned about.

The invitees were selected based several sources including suggestions from public health staff who work in the communities near the airport, contacting local councillors for suggestions about who to include, identifying public health and noise experts at area universities, identifying environmental health organizations in Toronto, and reviewing the stakeholder list that was developed to support the City's public consultation.

Can the public or additional members of organizations attend as observers?
Unfortunately, there will not be sufficient space for the public or observers to attend this workshop.

Will the workshop be recorded in video and audio, and be made public?
The proceedings of the workshop will be documented in a report that will be made publicly available by the end of November.

May we allow Windward Coop and Federation of Canadian Naturists to attend as key stakeholders?
For now, we can add the Windward Coop and the Federation of Canadian Naturists to our waiting list. We will contact you if additional space becomes available at this event.

Regards,

Stephanie

_____
Stephanie Gower, PhD
Research Consultant
Healthy Public Policy
Toronto Public Health
277 Victoria St, 7th Floor
Toronto, Ontario, Canada, M5B 1W2

__
Tel: (416) 338-8101
Email: sgower@toronto.ca

>>> 9/30/2013 9:17 pm >>>
Hi Agni,

In this email, I am addressing Christopher Dunn, the City's Project Manager,
and Monica Campbell and Stephanie Gower of Toronto Public Health,
to see if they can answer my questions below.

I am also copying in our rep from WindWard Coop.
WindWard is the residential building directly across from, and therefore the closest to, Billy Bishop Airport.
Windward is home to a high number of people with various health conditions and accessibility needs.

I am also copying in Judy Williams from the Federation of Canadian Naturists, who is about to confirm a representative for Hanlans Point Beach,
which adjoins the airport directly on its east. Hanlans Point Beach stakeholders have been ignored in all the assessments to date.
Their health would be directly impacted with any change to the current high-quality blue-flag water conditions, exposure to jet traffic and air/water/noise pollution.

Hello Christopher, Monica and Stephanie,
I am a citizen of Toronto who lives in Windward Coop, and I am also a naturist who regularly frequents Hanlans Point Beach for years.

I found out about the health assessment workshop and was surprised that the public was not invited.
So I did the next best thing - to invite key community stakeholders who had not yet been invited.
Those being Windward Coop and Federation of Canadian Naturists for Hanlans Point Beach.

From my correspondences with Agni of Golder Associates (below),
I now find out there was a predetermined list of key stakeholders, but I have not been able to get answers to my questions.
I would appreciate if the following questions could be addressed:

1) Why was the public not invited to the health impact assessment workshop?
2) Who are the invitees and what criteria were they chosen by?
3) What are the processes to be applied in this health impact assessment workshop?
4) Can the public or additional members of organizations attend as observers?
5) Will the workshop be recorded in video and audio, and be made public?
6) May we allow Windward Coop and Federation of Canadian Naturists to attend as key stakeholders? Both of these organizations are key community stakeholders who were not invited.

Thank you in advance for your time and consideration,

On 2013-09-30, at 4:11 PM, Papageorgiou, Agni wrote:

Hi

Apologies, the invitation list is not public at this time. I can tell you that the Bathurst Quay Neighbourhood Association was invited and has confirmed that they will be sending a representative.

Kind regards,
Agni

Agni Papageorgiou (M.Env.Sc., B.Sc., B.A, IAP2 Certificate) | Social and Environmental Services Consultant | **Golder Associates Ltd.**
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Please consider the environment before printing this email.

Sent: Monday, September 30, 2013 3:14 PM
To: Papageorgiou, Agni
Cc:
Subject: Re: Windward Coop registration / Oct. 9 Health Impact Meeting

Thanks Agni, is there a location online that lists the invitees?
If not, can you please email them to and myself.
Thanks,

On 2013-09-30, at 2:49 PM, Papageorgiou, Agni wrote:

Hi ,

Toronto Public Health identified representatives from a range of community organizations to participate in the workshop. Invitees were identified with broad community perspectives, such as neighbourhood associations, and key stakeholders in the public health field. We have limited spaces available to ensure that issues from across the community can be discussed in greater detail. We can't guarantee a space in the workshop at this time but Windward Coop is now on our waiting list and I will let you know over the next few days if a space becomes available.

Please let me know if you have any more questions.

Thanks,
Agni

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Sent: Monday, September 30, 2013 2:37 PM
To: Papageorgiou, Agni;
Subject: Re: Windward Coop registration / Oct. 9 Health Impact Meeting

Hi Agni, actually, it would be great to know 2 very important things:

- what criteria has Golder used to compile the invite list?
- who are the invitees?

I would very much appreciate this information.

On 2013-09-30, at 1:12 PM, wrote:

Hi Agni, can you also let me know what criteria Golder has used to come up with its invite list?

Thanks,

On 2013-09-30, at 1:05 PM, wrote:

Hi Agni, I copied , the rep for Windward, into our messages.

Windward Coop is the building right across from Billy Bishop airport.
It is the closest residential building to the airport.
As it is we have many people in our building with health concerns.
It is critical that Windward attend this meeting.

On 2013-09-30, at 1:02 PM, Papageorgiou, Agni wrote:

Hi

Thanks for your email and interest in the workshop. Can you provide some information about how you received the invitation? We have limited spaces available so we are tracking which invited organization registrants are

representing. We do also have a waiting list for interested organizations so if you are not affiliated with one of those that were invited we may still be able to accommodate you. In that case, can you provide me with some information on Windward Coop and your interest in the workshop?

If you would like to discuss over the phone, I'd be happy to give you a call this afternoon.

Thanks,
Agni

Agni Papageorgiou (M.Env.Sc., B.Sc., B.A, IAP2 Certificate) | Social and Environmental Services Consultant | **Golder Associates Ltd.**
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Please consider the environment before printing this email.

Sent: Monday, September 30, 2013 12:36 PM
To: Papageorgiou, Agni
Cc:
Subject: Windward Coop registration / Oct. 9 Health Impact Meeting

Hello Agni, could you please confirm registration for Windward Coop and as the representative?

Many thanks,

Subject: FW: Health impacts waterfront residents

>>> 10/13/13 4:20 PM >>>

Please do not allow jets to fly in and out of the Island Airport. My concern is twofold. I live right on the lake and enjoy comparatively quite living as a result. Porter would have it that the noise of the jets would be no different than traffic noise. This is misleading because though the decibel readings may be similar the experience or sensation of the jet noise is very different. I know this from experience. Jet noise is very particular. It doesn't strike you as being particularly loud but it is all encompassing and disrupts conversation when outside. My other issue is with the industrialization of the Harbour area and the effect it will have on small boating in the area. Expanding the airport will inevitably lead to more and more difficulties for small boat operators including restrictions of passage and further rules and regulations that will detract from the recreational possibilities of the area.

Thank you for your kind consideration.

Subject: FW: Submission to HIA Island Airport Jet Proposal

>>> 10/12/13 8:48 PM >>>
Dear Ms. Gower,

I am writing as a concerned resident of the Bathurst Quay neighbourhood; specifically I have lived at Windward Co-op, located at the corner of Little Norway Crescent and Stadium Road, directly adjacent to the island airport, for the past 18 years.

I have raised my family here (three children)and have also been working with young children and families in this community for many years in my capacity as an early childhood professional and parent educator. I am particularly concerned on behalf of the children at the child care centres located in this neighbourhood. As you know, young children are one of the most vulnerable populations but often get overlooked. There are two locations - one for infants & toddlers at the NW corner of Bathurst and Queens Quay (Atrium/Harbour Green Farms) & one at The Waterfront School. Both groups use the playgrounds and park in the neighbourhood extensively on a daily basis. Is anyone testing these children for toxicity from the constant exposure to carbon monoxide from traffic and other possible contaminants from the residual aircraft fuel in the air?

In terms of my family's and my own health, I have several very specific concerns I would also like to address, although I share the many other health concerns being raised by many individuals and groups both within and beyond this community.

1. There is a greasy black residue that appears on all the south side balconies of our building. It was a constant concern when I lived on that side of the building (I have since moved to a unit on the other side), as it would not come off without the use of a strong degreasing solvent and also seemed to adversely affect any plants I tried to grow on my balcony so I can't imagine it is good for anyone to be breathing in. For example, my 85 year old mother who has COPD and also lives at Windward. Is anyone investigating this residue and what assurances do we have that jet fuel will not continue to be dumped when planes are taking off or landing from the airport, as it is now?

2. Re: noise effects - I personally have developed a 30% hearing loss over the past few years, subsequent to sudden onset tinnitus that started in 2008. Although I have no definitive evidence that this is related to airport noise, my audiologist says the particular pattern of hearing loss that I have is NOT typical of age-related hearing loss, but rather to chronic exposure to ongoing noise.
I cannot comfortably sit on my balcony or even in my apartment with the windows open when planes are running up their engines as it aggravates my tinnitus and exacerbates my hearing loss for a period of time after exposure.

3. I have also had repeated episodes of ongoing sleep deprivation and have had to seek medical treatment for sleep-deprivation related concerns which affected my personal life and wellbeing as well as my ability to woYour literature states that "The Health Impact Assessment will evaluate impacts associated with air pollution, noise and traffic on the physical, mental, and social health of the nearby communities. The purpose of the study is to provide Toronto's Medical Officer of Health with the evidence necessary to advise on potential health impacts associated with the potential expansion of BBTCA service. ". I believe the points I have raised indicate significant negative impacts on the physical, mental and social health of myself, my family and my community.

I look forward to your response and to hearing the follow up from the modelling and other investigations currently being undertaken as part of the health impact assessment. When will the community as a whole have an opportunity to review your findings?

Yours Sincerely,

To: "sgower@toronto.ca" <sgower@toronto.ca>
Date: Wednesday, October 16, 2013 5:15 PM
Subject: Re: Health Impact Assessment & expanded Billy Bishop Airport

---

Hello Stephanie,

I am writing to express my concerns on the potential health impacts on citizens and visitors to Toronto if Billy Bishop Airport is expanded and jets are allowed to fly over our waterfront. I am very concerned about the health impacts from air and water pollution. I believe studies must be conducted to factor in the possibility for increased air traffic and different planes flying in and out of Billy Bishop Airport.

I am also concerned about the Mental Health impacts an expanded airport could have on people. The waterfront should be a place people can go to relax and find a place of serenity and calmness. I know from experience that having planes flying overhead, regardless of noise, can increase the anxiety levels of people below. I would like the city to look into the issues of how an expanded airport could impact people's anxiety and mental health.

There is a school located very close to the airport. What are the health impacts and concerns for children that live and go to school in the area?

I think that there are many questions and further studies must be completed to provide accurate information regarding this crucial decision.

Thanks,

From: Keith T Scott <kscott@fcn.ca>
Sent: Monday, October 07, 2013 9:48 AM
To: Papageorgiou, Agni
Cc: sgower@toronto.ca; mcampbe2@toronto.ca
Subject: Health Impact Assessment Workshop
Attachments: Page 1 GoulderR1.pdf; Page 2, 3 & 4 GoulderR1.pdf

Dear Ms. Agni Papageorgiou,

Please find attached the Federation of Canadians (FCN) submission to the Health Impact Assessment Workshop
to be held at Metro Hall, 55 John Street, Room #304 on October 9, 2013 from 6:00 p.m. to 9:00 p.m.

It would be appreciated if copies of both of these attachments could be made available to all the attending Stake Holders present at the
Workshop, to further aid in a full discussion of this very important subject to the Health and well being of the people of Toronto
and those relaxing on Hanlans Beach.

Yours naturally,

FCN

Keith T. Scott - FCN V.P. President

Federation of Canadian Naturists

P.O. Box 186, Station D, Etobicoke, Ontario, M9A 4X2 e-mail:
info@fcn.ca - Phone/fax: (416) 410 NUDE - www.fcn.ca

Golder Associates Ltd.
141 Adelaide Street West, Suite 910,
Toronto, Ontario,
Canada, M5H 3L5

October 7th, 2013

Attention: Agni Papageorgiou, (M.Env.Sc., B.Sc., B.A, IAP2 Certificate)
Social and Environmental Services Consultant
<Agni_Papageorgiou@golder.com>

Reference: Health Impact Assessment Workshop
Metro Hall, 55 John Street, Room #304 - October 9, 2013

My name is Keith T. Scott and I am the Vice President of the Federation of Canadian Naturists (FCN) <http://www.fcn.ca>, I hereby give notice, that I will be the representative from our Naturist organization, to the Health Impact Assessment Workshop at Metro Hall, 55 John Street, Room #304 on October 9, 2013 from 6:00 p.m. to 9:00 p.m.

The FCN formally protest both the expansion of the Billy Bishop Toronto Airport and the bringing in of jet air traffic.

The FCN is a member of the International Naturist Federation (INF) <www.inffni.org> and promotes the INF Motto and Objectives:- *"Naturism is a way of life in harmony with nature, expressed through social nudity, linked to self-respect, tolerance of differing views together with respect for the environment".*

The FCN and it's sister organization the Federation Quebecoise de Naturisme (FQN) <www.fqn.qc.ca/> have over 1,200 members, many of whom enjoy the natural quietude and peacefulness of Hanlans Point Beach as much as possible given its proximity to the Billy Bishop Toronto City Airport (BBTCA). We are dismayed at the proposal to expand BBTCA and/or to include jet aircraft by the extension of the runways (RESA's) into the waters of Lake Ontario bordering Hanlans Point Beach. There has been a great interest in Hanlans Beach from our sister organizations in the United States from the American Association for Nude Recreation (AANR) and The Naturist Society (TNS) and the rest of the world which has increased the tourism to Toronto.

The following pages are the issues which must be clarified and discussed during the workshop and must include but not necessarily be limited to:

With the proposed 124 meter increase of the main runway to the west into Lake Ontario and again to the east into the Inner Harbor, see page #25 of the *"Community Discussion on the Use of Jets at BBTCA"*, brochure pdf, it states, that with the north winds off the lake it will bring more sand an wildlife to that end of the Hanlans Point Beach because of the new extension, to some extent this may be true but at the present time, all that accumulates at that end of the beach is washed up garbage etc. with the larger breakwater this mess would be made a lot worse and would increase the wild bird population, a known hazard to airports.

1) Also to extend the runway would mean that the landfill required for the extension would also further restrict the flow underwater due to the slope of the landfill support.

2) A great concern with any airport is accidental or otherwise spillage of fuel for the planes using the airport. With the proposed increase in air traffic, there will be a greater amount of fuel required to service the planes, no matter whether they are the Dash8-Q 400 Prop jets or the new CS100 jets. There are many safety and environmental concerns.
   (a) What is the current storage capacity of jet fuel holding tanks at BBTCA and to what number and holding capacity (3 days? 5 days?) Would they have to be expanded?
   (b) How is jet fuel currently transported to the airport?
   (c) How would jet fuel be transported to those holding tanks and how would they be transferred into those tanks?
   (d) What measures are currently in place and would be put in place to prevent a volatile explosion so close to recreational and residential areas represented by Toronto, the Islands and Hanlans Point Beach?
   (e) What would be the percentage of spillage over water and how would fumes be contained?
   (f) At Vancouver International Airport there has been a number of large *spillages of fuel over the water* and a major spill every 7 years.
   (g) Where will the additional fuel tanks be located?

   With the proximity of the airport to the waters of Lake Ontario and the inner harbor and in particular to Hanlans Beach, this is of a great concern to the FCN.

3) With the increase of flights out of BBTCA there is another problem that we note has not been mentioned or addressed in any of the information available and that is the rubber that is shed by ANY aircraft on take off and landing. What measures will be taken to make sure that all that shredded and ground-up rubber composite dust etc. doesn't get into and pollute the waters surrounding BBTCA by the rain and snow.

4) There is also the concern for the Glycol, used in de-icing the planes, in the winter! What measures are being taken for ensuring that the run off of this carcinogen is not going to get in to the Lake Ontario waters?

   a) Aircraft de-icing chemicals will runoff into the lake. These are Ethylene glycol and Propylene glycol, both deadly substances in small quantities. Ethylene glycol causes central nervous depression and kidney and liver damage; Propylene glycol, when used by the airports with anticorrosion chemicals, is just as toxic. Studies show that each winter large amounts of fish and wildlife are poisoned to death by aircraft de-icing chemicals. Studies have not been conducted on humans.
   b) Chemical and other polluting agents used on runways will runoff into the lake.
   c) Fuel leakage and spillage from refueling and storage will be leached into ground water or contaminate storm water run-off into the lake. The airport operations spillage must be directed into a sewage treatment plant, not into the lake.
   d) Runoff from parking lots, building roofs, aprons and taxiways, and other areas with hard surfaces will also run directly into the lake.
   e) Lake Ontario may also become contaminated from construction spillage and airborne particles.
   f) Fuel dumping from flying aircraft, if it occurs over the lake, can pollute Lake Ontario with kerosene. Aircraft often dump excess fuel before landing as a safety measure, to protect the aircraft's structure and landing gear, reduce the chance of a brake fire, and or to ensure a safe landing.

5) With respect to the peaceful natural environment of the Naturist using Hanlans Beach to get away from the hustle and bustle of living in a large city, we are very much concerned as to the increase in air pollution water pollution and noise pollution from the increase of more planes, whether they be Prop Jets are pure Jets.

   We ask, what advantages and unproven possible opportunities would be worth the risk to human health and disturbances from increased air pollution, increased decibels and possible night flights, by bringing jets into the heart of Toronto, versus where they are currently accommodated at Toronto Pearson?

6) On page 35 of the *"Community Discussion on the Use of Jets at BBTCA"* brochure pdf, where it speaks to the Transportation, Private auto pick-up, for those flying into and out of BBTCA, we note that there are ONLY 17 *passenger pick-up area (short term parking)* spaces. There are no long-term parking space proposed and with Porter Airlines wanting their Jets to fly to the Caribbean, this would mean that the passengers would be away for at least a week would have nowhere to park. With the proposed estimated increase in passenger traffic at BBTCA this is unbelievably unrealistic in this day and age.

7) If the purpose of this study is to "provide evidence" to Toronto's Medical Health Officer to enable him or her to advise on "potential health impacts associated with the potential expansion of BBTCA," what kind of public feedback would be considered sufficient empirical "evidence"

8) We are glad the HIA takes into account a range of factors such as "physical environment, and social environment," but the City of Toronto who permanently sanctioned our Clothing-optional Beach at Hanlans Point after three years of study, apparently did not realize the economic, social, physical and wellness importance of a Clothing-optional Beach to Naturists using Hanlans for both the residents of Toronto and tourists escaping the rigors of urban life. We can assure you of the utmost importance of maintaining a Clothing-optional Beach with clean air, clean water and clean sands in the middle of Toronto!

9) The Melbourne "Wellness" study has been incorporated into a multitude of parks, worldwide. The importance of clean green space and waters for recreational purposes and its impact on human psychological and physical health and well-being are unchallenged and have now been backed up with empirical data!

Yours naturally,

Keith T. Scott – FCN Vice President

C.C. Stephanie Gower – Toronto Public Health Department
<sgower@toronto.ca>
Monica Campbell – Toronto Public Health Department
<mcampbe2@toronto.ca>

GREENBERG CONSULTANTS INC.

Oct. 10, 2013

David McKeown
Medical Officer of Health
City of Toronto

Dear Dr. MeKeown,

Thank you for including me in the Health Impact Assessment Workshop held as part of the Billy Bishop City Airport Review. I would like to offer the following comments in response to this Workshop.

It would be a mistake to narrowly consider the many negative impacts on air quality, land and water based activities, noise, traffic, water quality etc. in isolation taken one by one by one. What is really at stake here is their cumulative impact on an environment that is already under considerable pressure with the current levels of activity at Billy Bishop Airport. What we are seeing in ecological terms is an environment in stress which risks being pushed over the edge by the interactions among these individual negative impacts as they amplify each other and potentially degrade the overall environment, undermining its ability to perform extremely important roles in economic, social and environmental terms.

In other words there is a tipping point where the changes at the margin in each of the areas you will be examining add up to larger negative impact which is greater than the sum of their individual parts. The expansion of the airport and the introduction of jets runs the very real risk of undoing and setting back decades of efforts by Torontonians going back to David Crombie's Royal Commission and the Regeneration Trust and extending to the current work of Waterfront Toronto to reclaim the city's waterfront as an area that is "clean, green, accessible to all and contributes to economic prosperity and vitality of the city as a whole". This is not a local issue. It not only affects the tens of thousands of people who now live and work along the waterfront with many thousands more to follow, but also the many hundreds of thousands of Torontonians and visitors who do not escape the city to cottages and rely on and enjoy the waterfront as a place of recreation and restoration.

It is in the end a question of balance, not allowing one high impact use to be exaggerated to the point where it interferes with and undermines all other objectives. Please consider not only the individual trees but the impact on the forest.

Respectfully,

Ken Greenberg

Principal

20 Niagara Street – Unit 603, Toronto, Ontario, Canada M5V 3L8
T 416 603 3777 F 416 203 7497 E kgreenberg@sympatico.ca
www.greenbergconsultants.com

Subject: FW: Re Current Health Assessment re: jets at Billy Bishop Airport

>>> 15/10/2013 9:06 AM >>>
Dear Stephanie

As a resident and home-owner in South Parkdale, I am very concerned with the plan to introduce jets to the Billy Bishop Airport and do not wish to see this happen.

There is so much to be concerned about:

1. The environmental damage to the harbour and marine and wildlife
2. Noise pollution from the jets themselves – which has very serious deleterious effects on those exposed to it.
3. The effect on the Island residents and residents of a very densely populated area along the waterfront of increased flights.
4. Air and carbon pollution from the jet fuels themselves.
5. Disastrous effects on a densely populated area in case of an accident.

Toronto has mishandled its waterfront in many ways but is now trying to rectify that situation by putting in place public areas in an around the harbour.
An expanded airport runway built solely for the purpose of enabling jets to land and take off would hamper this progress and not make it a people-friendly area.

With a new dedicated train line to Pearson airport, the need for long-haul jets (which I believe is part of the plan) at the airport is not great and the negative impact on the people of Toronto living in an around the airport outweighs any benefits to anyone but Porter itself.

Thank you for bringing our concerns to the attention of Golder Associates, the firm conducting the assessment for the City of Toronto.

Sincerely,
--

Sent: Tuesday, October 15, 2013 5:54 PM
To: sgower@toronto.ca
Subject: Health Impacts of Expanded Island Airport

Dear Stephanie Gower:

I am writing to provide input on the serious health impacts of an expanded Island Airport with jets.

My husband and I have lived at Harbour Square for ten years after moving from North Toronto. At the time of our move, the airport had little traffic and we were assured that this level was protected by the Tripartite Agreement. My husband suffers from chronic bronchitis. We are very concerned that a decision to permit jets will result in many personal health risks to us. We are also concerned about the effects on the children who live and attend school near Bathurst Quay and on people throughout downtown Toronto and the GTA who are already tolerating high amounts of pollution from the congested roads. We urge you to study thoroughly what is known about the impact of jets on people who live and work in nearby areas and to insist that you are given enough time so that the essential information about health impacts is not gathered in haste.

Following are some points of which we are aware that we hope you will incorporate in your report:

- A recent study published in the British Medical Journal, and reported on in the New York Times on Oct. 8, 2013, provided strong evidence that people living near airports have increased probability of suffering a stroke and cardio-vascular disease. The study indicated that the airport noise was a factor in these results. Increased noise from jets at the Island Airport would exacerbate the situation for Toronto residents who live near the waterfront or anywhere on the flight paths.
- Airborne pollutants from the planes ares already a problem for the elderly, children and people with respiratory problems. Adding jets will increase the problem.
- De-icing fluids contaminate the water in the lake. People in Toronto drink the water. This, in addition to the airborne pollutants, will increase the health risks to all who depend on Lake Ontario for drinking water or for recreation.
- The increase in the number of fuel trucks to service the larger planes will increase traffic congestion and public safety, as will the increased numbers of cars, cabs, etc bringing people to the airport. The health risks resulting from the increased pollution and from the increased danger should be serious considerations and require careful thought.
- Many mental health risks will result from a decision to allow jets at the airport. The waterfront is a place for all city residents to enjoy tranquility. Sacrificing this precious resource to a busy airport and to increased road congestion would take away a place people come to relax and recharge. The safety hazards will result in increased anxiety and fear among those who live anywhere near the waterfront.

We have listed only a few of the health hazards that would result from an expanded airport with jets. We are confident that an exhaustive search of the literature in this field will provide conclusive evidence that approval of the proposal would put the health and well-being of Torontonians at serious risk. Please ensure that you are given enough time to do a proper study.

Sincerely,

From: Stephanie Gower <sgower@toronto.ca>
Sent: Thursday, October 10, 2013 4:01 PM
To: Papageorgiou, Agni; Repaso-Subang, Theresa
Cc: Ronald (Public Health) Macfarlane
Subject: Fwd: letter for submission as part of HIA
Attachments: CTCHC scanned letter.pdf

fyi

>>> 10/10/2013 3:49 PM >>>
Hi Stephanie,

Thanks for inviting Central Toronto CHC to the HIA last night. It was informative and I hope the consultants are able to make sense of the mounds of concerns set before them!

Please find attached a letter from our Community Health Centre outlining our concerns around the airline expansion to be added to the HIA.

Thank you,
Linor David

Linor David
Health Promoter Early Years

Central Toronto Community Health Centres
168 Bathurst Street
Toronto, ON M5V 2R4
Tel: 416-703-8482 ext 233
Fax: 416-703-6190
Email: ldavid@ctchc.com
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CENTRAL TORONTO
Community Health Centres

168 Bathurst Street, Toronto ON M5V 2R4
www.ctchc.com

October 7, 2013

Dr. David McKeown
Medical Officer of Health
City of Toronto

Dear Dr. McKeown;

Central Toronto Community Health Centres is a provider of comprehensive primary health and wellness services for individuals and families who live in the catchment bounded by University, College, Dovercourt and Lake Ontario. Our priority populations include youths and adults who are homeless/under housed, individuals living with mental health and substance use issues, immigrants and refugees, those without insurance and low income earners. The gaps in access to the social determinants of health and the complex health conditions of these priority communities is what compels us as an organization to speak to our concerns about any possible expansion to the Billy Bishop Airport.

We already know that 'air shed in downtown Toronto is at capacity', as evidenced by studies done by South Riverdale Community Health Centre. As you are aware, there are issues of black carbon, ultrafine and other particulate matter, which especially contribute to lung inflammation, leading to asthma, bronchitis and other small airway disease. Black carbon is associated with an increased rate of respiratory and cardiovascular disease, irreversible decreased lung function in children, and increased carcinogenic risk.

The scientific evidence tells us that particulates vary in chemical composition but the sulphates from the burning of fossil fuels are particularly harmful to the bronchioles and alveoli. We know from the Ministry of the Environment that more than 1,800 deaths are related to smog in Ontario each summer and this increase in air traffic will contribute to smog. Polycyclic aromatic hydrocarbons (PAH) are carcinogenic and difficult to prove, but studies have been done in other airport communities linking them to higher rates of certain cancers (leukemia, lung, thyroid). These PAH are related to hormonal balance in adults and lower IQ scores in children as well.

Noise, which increases the risk of hearing loss, tinnitus, psychological distress, impaired reading and comprehension in children, would be a direct effect of increased air traffic takeoff and landing, especially by jets.

Studies in Santa Monica, California done by a group of pediatric residents from UCLA (http://www.healthimpactproject.org/resources/document/Santa-Monica-airport.pdf) have found that particularly jet take-offs and landings contribute to elevated levels of black carbon; noise induced problems and particulate matter issues; studies in Germany as well as Sweden, have found increased levels of early hearing loss, asthma, early heart disease, hypertension, tinnitus and sleep disturbances, (not just from noise), and of course, higher levels of stress as measured by several stress hormones. One study done in Brescia Italy found that breathing in polluted air may reprogram our DNA in as few as 3 days. According to the Journal of the Lead from Australia, a single runway equipped airport with light to medium traffic contaminates an area about 6 miles around the field and 20 miles downwind. (http://www.lead.org.au/Lanv7n3/L73-4.html). Another study done in Georgeotwn, an area of Seattle which surrounds the International Airport, has a 57% higher asthma rate, an 83% higher pregnancy complication rate and a 50% higher infant mortality rate when compared with other zip codes in farther away counties. (Georgetown Crime Prevention and Community Council of Seattle-King County Department of Public Health Study). As well, the relationship with volatile organic compounds in jet exhaust, that is, 1,3-butadiene and benzene, and the risk for leukemia and thyroid cancer has been shown to be connected in studies done by the Federal Agency for Toxic Substances and Disease Registry in the US. Furthermore, data from the State of Washington Department of Health regarding the Seattle-Tacoma Airport shows that cancer rates are not only up near the airport but increase the closer you get to the airport.

As we are sure you are aware, children are especially affected by air traffic in communities situated close to airports. In this particular instance, we are also concerned about the obvious impact on the minimal green space available to our residents living close to the airport. Norway Park will be interfered with by the presence of increased traffic, parking and taxis idling. The obvious risks of jets crashing, or fuel fires in a densely populated area certainly do not need to be emphasized by our Centre, as others can better address this and recent experienced witnessed elsewhere can serve as examples of the risks and consequences.

We are advising precautionary principles are employed, especially in light of knowledge already gained from research in other big cities with airports near dense populations. The community we serve around the Airport includes low income families with children and co-op building adjacent to the airport, seniors with already complex health conditions living in the blocks north of King up to College and homeless individuals for whom the corners of Queen/Bathurst and Parkdale is called community. The health of these communities and populations are particularly vulnerable and we join them in asking you to consider the health impact this expansion would have, both in the short and long-term.

The City's own ChemTRAC, which aims to improve public health and support a green local economy by reducing toxic chemicals in our environment, noted in 2012 that "Air pollutants contribute to thousands of lost work days, hospitalizations and premature deaths, as well as diminished quality of life, especially for people who are more at risk, including children, seniors, and individuals with pre-existing illnesses." We therefore hope that these finding find their way into the assessment being undertaken. We trust that the Toronto Public Health comprehensive health impact assessment will echo the other evidence sited above but we also ask that the City not be short sighted in looking only at the economic benefits

being put forward by the proponents of this expansion but at the quality of life and long term individual and community health which will be adversely impacted.

Thank you for inviting us into this important public health and planning conversation.

Sincerely,

Angela Robertson
Executive Director

Dr. Debbie Honickman
Physician at Central Toronto

Subject: FW: Submission to HIA Island Airport Jet Proposal

>>> 10/15/13 5:04 PM >>>
Either waterfront revitalization is allowed to continue to improve the natural environment and beauty of our city or. . . Island Airport Jets are given the nod. The two are not compatible.

Jets will add
to Toronto's jet effluents, noise, cars, and thus overall pollution levels.
Pollution has well documented negative side effects on peoples'
health. Effects go all the way from increased stress levels to respiratory problems and cancers. All of Toronto citizens as well as wildlife would have
increased susceptibility to ill effects. The millions of people living in
Toronto are already negatively affected by the new cross city flight path from Pearson Airport. Waterfront living conditions would incur the greatest health impacts from Island Airport Jets.

Waterfront revitalization has such positive benefits to offer the health of Toronto's citizens in the way of natural landscape, trees, beach and lake calming effects. This must not be traded off
for private jet proposal concerns.

Thank you for listening,

Concerned Toronto Citizen

To:	mayor_ford@toronto.ca
Cc:	Adam Vaughan; Christopher Dunn
Subject:	City Health - Island Airport Noise Study Question
Date:	Monday, October 07, 2013 2:07:46 PM
Attachments:	Airport Noise Measurements - DBA or DBC Decibels.doc

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For: Mayor Ford, Toronto City Council

Re: City Health - Island Airport Noise Study

We have a question. **Is the City Health Study of Airport Noise reporting in Adjusted DBA Decibels, or Complete DBC Decibels**?

We strongly recommend using DBC Decibels for reporting airport noise, as DBA Decibels are only a partial measure of airport noise.

On a related question, as a resident of the Harbourfront, I noticed the airport was quieter this past September. But lately, it's gone back to being very noisy.

I'm trying to find out if there's any way the airport can do it again, whatever they did in September, to operate with less noise.

FYI, The City Health Department was doing airport noise monitoring in September, and MLS had forwarded a formal noise complaint to the Port Authority in late August.

Perhaps the airport stayed quiet for a month, until the city stopped watching it. Nobody knows how the Port Authority operates, but whatever they did, the airport was quieter in September.

We're trying to find out what the airport did right, in September, to lower its airport ground noise levels. We're hoping we can ask them to do it again.

Thank you if you can help us with this question, of why the airport was quieter, and how did they operate with lower noise levels, in September.

Max Moore, Harbourfront Community Association
www.harbourfrontcommunity.info

For: Airport Community Committee - Noise Sub-Committee
From: Max Moore, Harbourfront Community Association, Feb 2, 2012

Subject: Airport Noise Measurements - DBA Decibels or DBC Decibels

Airport Noise is measured in decibels, but there are two types of decibel measurements.

Toronto Island Airport is using an invalid noise measurement, with DBA Decibels.

Adjusted Decibel readings, called DBA Decibels, measure only 80% of the noise, while Complete Decibel readings, called DBC Decibels, measure the full sound spectrum.

City Hall is hearing reports of **65 DBAs** of airport noise, while Island Airport neighbours are hearing **80 DBCs** of airport noise. It's the same noise, with different measurements.

DBA decibels are discounted by approx 20% because DBA decibels don't measure bass sounds. DBC measurements, which include bass noise, are a more accurate measure of both rock concerts and airport noise because there's so much bass in these noises.

Noise meters can display noise measurements as both DBAs and DBCs, simply by pressing a button. When you change from DBC to a DBA display, the decibel reading is lowered by 15-20%, simply by removing bass readings. All this does is to change the measurement, not the sound. It's like advertising a sale price and still charging full price.

If you're managing sound for a concert in a public park, for example, a policeman might ask you to turn down the volume because people are complaining. Some soundmen would show the policeman the lower noise reading of 80 DBA. It's dishonest, but if you show the more accurate 100 DBC decibel display, the cop might stop the concert.

Similarly, airports report noise measurements in DBA decibels to minimize their noise reports, for public relations purposes. Lower numbers help convince city hall that the airport is operating within legal noise limits, when, in truth, it is breaking the law.

This is why Harbourfront residents are requesting that Airport Noise Measurements be reported in Complete DBC Decibels. For the airport to continue using adjusted and averaged DBA noise measurements, discounted by 20%, is simply lying with statistics.

Adjusting and discounting airport noise measurements by 20% is dishonest and wrong. Surely the Island Airport can do better for its waterfront neighbours than trying to baffle them with bullshit.

Harbourfront residents deserve more honesty from a federal agency like the Port Authority. Measuring airport noise with DBC Decibels would be a good way to start.

To:	Papageorgiou, Agni
Subject:	Dr. Pieter Jugovic Medical Research on How Airports Affect Health (attached)
Date:	Thursday, October 10, 2013 11:34:17 AM
Attachments:	! Airport Health Concerns - Air and Noise Pollution, Dr. Pieter Jugovic Medical Research.doc ! Airport Noise Management Proposals.doc

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For: Danny da Silva, Golder Associates (please forward)

Re: Dr. Pieter Jugovic Medical Research on Airport Air and Noise Pollution (attached)

As we discussed, I'm enclosing the research by Dr. Pieter Jugovic, focusing on air and noise health effects around airports.

Also enclosed are Airport Noise Management Proposals, for mitigation of airport ground noise in the surrounding neighbourhood.

Max Moore, Harbourfront Community Association
www.harbourfrontcommunity.info

For: City of Toronto, Public Health Study of Island Airport Environment & Health Impacts

Subject: Airports - Air Pollution and Noise Pollution

Medical Literature Research done by: Dr. Pieter Jugovic,
Research Reports. Searched: Medline 2008-2013 – limited to English, human, and review articles
October 4, 2013 Database: Ovid MEDLINE(R), 1996 to October 4, 2013

1. **Hypertension and exposure to noise near airports: the HYENA study.**

Authors
Jarup L. Babisch W. Houthuijs D. Pershagen G. Katsouyanni K. Cadum E. Dudley ML. Savigny P. Seiffert I. Swart W. Breugelmans O. Bluhm G. Selander J. Haralabidis A. Dimakopoulou K. Sourtzi P. Velonakis M. Vigna-Taglianti F. HYENA study team.
Department of Epidemiology and Public Health, Imperial College London, St Mary's Campus, Norfolk Place, London, United Kingdom. l.jarup@imperial.ac.uk
Source:
Environmental Health Perspectives. 116(3):329-33, 2008 Mar.
Abstract
BACKGROUND: An increasing number of people are exposed to aircraft and road traffic noise. Hypertension is an important risk factor for cardiovascular disease, and even a small contribution in risk from environmental factors may have a major impact on public health.

OBJECTIVES: The HYENA (Hypertension and Exposure to Noise near Airports) study aimed to assess the relations between noise from aircraft or road traffic near airports and the risk of hypertension.

METHODS: We measured blood pressure and collected data on health, socioeconomic, and lifestyle factors, including diet and physical activity, via questionnaire at home visits for 4,861 persons 45-70 years of age, who had lived at least 5 years near any of six major European airports. We assessed noise exposure using detailed models with a resolution of 1 dB (5 dB for United Kingdom road traffic noise), and a spatial resolution of 250 x 250 m for aircraft and 10 x 10 m for road traffic noise.

RESULTS: We found significant exposure-response relationships between night-time aircraft as well as average daily road traffic noise exposure and risk of hypertension after adjustment for major confounders. For night-time aircraft noise, a 10-dB increase in exposure was associated with an odds ratio (OR) of 1.14 [95% confidence interval (CI), 1.01-1.29]. The exposure-response relationships were similar for road traffic noise and stronger for men with an OR of 1.54 (95% CI, 0.99-2.40) in the highest exposure category (65 dB; p(trend) = 0.008).

CONCLUSIONS: Our results indicate excess risks of hypertension related to long-term noise exposure, primarily for night-time aircraft noise and daily average road traffic noise.
Year of Publication: 2008

2. **Acute effects of night-time noise exposure on blood pressure in populations living near airports.**

Authors
Haralabidis AS. Dimakopoulou K. Vigna-Taglianti F. Giampaolo M. Borgini A. Dudley ML. Pershagen G. Bluhm G. Houthuijs D. Babisch W. Velonakis M. Katsouyanni K. Jarup L. HYENA Consortium.
Department of Hygiene and Epidemiology, Medical School, National and Kapodistrian University of Athens, 75, Mikras Asias Street, Athens 11527, Greece.
Source: European Heart Journal. 29(5):658-64, 2008 Mar.
Abstract
AIMS: Within the framework of the HYENA (hypertension and exposure to noise near airports) project we investigated the effect of short-term changes of transportation or indoor noise levels on blood pressure (BP) and heart rate (HR) during night-time sleep in 140 subjects living near four major European airports.

METHODS AND RESULTS: Non-invasive ambulatory BP measurements at 15 min intervals were performed. Noise was measured during the night sleeping period and recorded digitally for the identification of the Source: of a noise event. Exposure variables included equivalent noise level over 1 and 15 min and presence/absence of event (with LAmax 35 dB) before each BP measurement. Random effects models for repeated measurements were applied. An increase in BP (6.2 mmHg (0.63-12) for systolic and 7.4 mmHg (3.1, 12) for diastolic) was observed over 15 min intervals in which an aircraft event occurred. A non-significant increase in HR was also observed (by 5.4 b.p.m.). Less consistent effects were observed on HR. When the actual maximum noise level of an event was assessed there were no systematic differences in the effects according to the noise Source: .

CONCLUSION: Effects of noise exposure on elevated subsequent BP measurements were clearly shown. The effect size of the noise level appears to be independent of the noise Source: .
Year of Publication: 2008

3. **Airport-related air pollution and noise.**

Authors: Cohen, Beverly S. Bronzaft, Arline L. Heikkinen, Maire. Goodman, Jerome. Nadas, Arthur.
New York University School of Medicine, New York, New York 10987, USA. cohenb@env.med.nyu.edu
Source: Journal of Occupational & Environmental Hygiene. 5(2):119-29, 2008 Feb.
Abstract
To provide quantitative evidence of the impact on people of a neighboring metropolitan airport, La Guardia Airport (LGA) in New York City, (1) airborne particulate matter (PM) was measured to determine whether concentration differences could be detected between homes that are upwind and downwind of the airport; (2) 24-hr noise measurements were made in 12 homes near the airport; and (3) the impact of noise was assessed by a Community Wellness and Health Promotion Survey. Particulate matter concentrations were higher during active airport operating hours than during nonoperating hours, and the percent increase varied inversely with distance from the airport. Hourly differences between paired upwind and downwind sites were not remarkable. Residents living near the airport were exposed to noise levels as much as four times greater than those experienced by residents in a quiet, comparison home. Impulse noise events were detected from both aircraft and vehicular traffic. More than 55% of the people living within the flight path were bothered by aircraft noise, and 63% by highway noise; these were significantly higher percentages than for residents in the nonflight area. The change in PM concentrations with distance during operating compared with nonoperating hours; traffic-related impulse noise events; and the elevated annoyance with highway noise, as well as aircraft noise among residents in the flight path area, show airport-related motor vehicle traffic to be a major contributor to the negative impact of airports on people in the surrounding communities.
Year of Publication: 2008

4. **Increased prevalence of hypertension in a population exposed to aircraft noise.**

Authors: Rosenlund, M. Berglind, N. Pershagen, G. Jarup, L. Bluhm, G.
Department of Environmental Health, Stockholm County Council, Sweden. mats.rosenlund@smd.sll.se
Comment in: Occup Environ Med. 2001 Dec;58(12):761; PMID: 11706140
Source: Occupational & Environmental Medicine. 58(12):769-73, 2001 Dec.
Abstract
OBJECTIVES: To investigate whether there is a relation between residential exposure to aircraft noise and hypertension.

METHODS: The study population comprised two random samples of subjects aged 19-80 years, one including 266 residents in the vicinity of Stockholm Arlanda airport, and another comprising 2693 inhabitants in other parts of Stockholm county. The subjects were classified according to the time weighted equal energy and maximum aircraft noise levels at their residence. A questionnaire provided information on individual characteristics including history of hypertension.

RESULTS: The prevalence odds ratio for hypertension adjusted for age, sex, smoking, and education was 1.6 (95% confidence interval (95% CI) 1.0 to 2.5) among those with energy averaged aircraft noise levels exceeding 55 dBA, and 1.8 (95% CI 1.1 to 2.8) among those with maximum aircraft noise levels exceeding 72 dBA. An exposure-response relation was suggested for both exposure measures. The exposure to aircraft noise seemed particularly important for older subjects and for those not reporting impaired hearing ability.

CONCLUSIONS: Community exposure to aircraft noise may be associated with hypertension.
Year of Publication: 2001

5. **Personal, indoor, and outdoor exposure to VOCs in the immediate vicinity of a local airport.**

Authors: Jung, Kyung-Hwa. Artigas, Francisco. Shin, Jin Young.
New Jersey Meadowlands Commission, Meadowlands Environmental Research Institute, 1 DeKorte Park Plaza, Lyndhurst, NJ 07071, USA.
Source: Environmental Monitoring & Assessment. 173(1-4):555-67, 2011 Feb.
Abstract
This study measures the effect of emissions from an airport on the air quality of surrounding neighborhoods. The ambient concentrations of benzene, toluene, ethylbenzene, and o-, m-, and p-xylene (BTEX) were measured using passive samplers at 15 households located close to the airport (indoor, outdoor, and personal), at the end of airport runways and an out-of-neighborhood location. Measurements occurred over a 48-h period during summer 2006 and winter 2006-2007. The average concentrations were 0.84, 3.21, 0.30, 0.99, and 0.34 ug/m3 at the airport runways and 0.84, 3.76, 0.39, 1.22, and 0.39 ug/m3 in the neighborhood for benzene, toluene, ethylbenzene, m-, p-, and o-xylene.

The average neighborhood concentrations were not significantly different to those measured at the airport runways and were higher than the out-of-neighborhood location (0.48, 1.09, 0.15, 0.78, and 0.43 ug/m3, each BTEX). B/T ratios were used as a tracer for emission Source: s and the average B/T ratio at the airport and outdoors were 0.20 and 0.23 for the summer and 0.40 and 0.42 for the winter, suggesting that both areas are affected by the same emission Source: .

Personal exposure was closely related to levels in the indoor environment where subjects spent most of their time. Indoor/outdoor (I/O) ratios for BTEX ranged from 1.13 to 2.60 and 1.41 to 3.02 for summer

and winter. The seasonal differences in I/O ratios reflected residential ventilation patterns, resulting in increased indoor concentrations of volatile organic compounds during winter.
Year of Publication: 2011

6. **The psychological cost of aircraft noise for children.**
Authors: Bullinger, M. Hygge, S. Evans, G W. Meis, M. von Mackensen, S.
Department for Medical Psychology, University of Hamburg, Germany. bullinger@uke.uni-hamburg.de
Source: Zentralblatt fur Hygiene und Umweltmedizin. 202(2-4):127-38, 1999 Aug.
Abstract
Psychological effects of aircraft noise exposure on children have only recently been addressed in the References. The current study took advantage of a natural experiment caused by the opening of a major new airport, exposing children in a formerly quiet area to aircraft noise. In this prospective longitudinal investigation, which employed non-exposed control groups, effects of aircraft noise prior to and subsequent to inauguration of the new airport as well as effects of chronic noise and its reduction at the old airport (6 and 18 month post relocation), were studied in 326 children aged 9 to 13 years. The psychological health of children was investigated with a standardized quality of life scale as well as with a motivational measure derived from the Glass and Singer stress aftereffects paradigm. In addition a self report noise annoyance scale was used.
In the children studied at the two airports over three time points, results showed a significant decrease of total quality of life 18 months after aircraft noise exposure as well as a motivational deficits operationalized by fewer attempts to solve insoluble puzzles in the new airport area.
Parallel shifts in children's attributions for failure were also noted. At the old airport parallel impairments were present before the airport relocation but subsided there after. These findings are in accord with reports of impaired psychological health after noise exposure and indicate the relevance of monitoring psychological parameters as a function of environmental stressors among children.
Year of Publication: 1999

7. **Current and future particulate-matter-related mortality risks in the United States from aviation emissions during landing and takeoff.**
Authors: Levy JI. Woody M. Baek BH. Shankar U. Arunachalam S.
jonlevy@bu.edu
Source: Risk Analysis. 32(2):237-49, 2012 Feb.
Abstract
Demand for air travel is projected to increase in the upcoming years, with a corresponding influence on emissions, air quality, and public health. The trajectory of health impacts would be influenced by not just emissions growth, but also changes in non-aviation ambient concentrations that influence secondary fine particulate matter (PM(2.5)) formation, population growth and aging, and potential shifts in PM(2.5) concentration-response functions (CRFs). However, studies to date have not systematically evaluated the individual and joint contributions of these factors to health risk trajectories. In this study, we simulated emissions during landing and takeoff from aircraft at 99 airports across the United States for 2005 and for a 2025 flight activity projection scenario. We applied the Community Multiscale Air Quality (CMAQ) model with the Speciated Modeled Attainment Test (SMAT) to determine the contributions of these emissions to ambient concentrations, including scenarios with 2025 aircraft emissions and 2005 non-aviation air quality. We combined CMAQ outputs with PM(2.5) mortality CRFs and population projections, and evaluated the influence of changing emissions, nonaviation concentrations, and population factors. Given these scenarios, aviation-related health impacts would increase by a factor of 6.1 from 2005 to 2025, with a factor of 2.1 attributable to emissions, a factor of 1.3 attributable to population factors, and a factor of 2.3 attributable to changing nonaviation concentrations which enhance secondary PM(2.5) formation. Our study emphasizes that the public

health burden of aviation emissions would be significantly influenced by the joint effects of flight activity increases, non-aviation concentration changes, and population growth and aging. 2011 Society for Risk Analysis.
Year of Publication: 2012

8. **Does traffic-related air pollution explain associations of aircraft and road traffic noise exposure on children's health and cognition? A secondary analysis of the United Kingdom sample from the RANCH project.**
Authors: Clark C. Crombie R. Head J. van Kamp I. van Kempen E. Stansfeld SA.
Centre for Psychiatry, Barts and The London School of Medicine, Queen Mary University of London, London, United Kingdom. c.clark@qmul.ac.uk
Source: American Journal of Epidemiology. 176(4):327-37, 2012 Aug 15.
Abstract
The Authors examined whether air pollution at school (nitrogen dioxide) is associated with poorer child cognition and health and whether adjustment for air pollution explains or moderates previously observed associations between aircraft and road traffic noise at school and children's cognition in the 2001-2003 Road Traffic and Aircraft Noise Exposure and Children's Cognition and Health (RANCH) project. This secondary analysis of a subsample of the United Kingdom RANCH sample examined 719 children who were 9-10 years of age from 22 schools around London's Heathrow airport for whom air pollution data were available. Data were analyzed using multilevel modeling.
Air pollution exposure levels at school were moderate, were not associated with a range of cognitive and health outcomes, and did not account for or moderate associations between noise exposure and cognition.
Aircraft noise exposure at school was significantly associated with poorer recognition memory and conceptual recall memory after adjustment for nitrogen dioxide levels.
Aircraft noise exposure was also associated with poorer reading comprehension and information recall memory after adjustment for nitrogen dioxide levels.
Road traffic noise was not associated with cognition or health before or after adjustment for air pollution. Moderate levels of air pollution do not appear to confound associations of noise on cognition and health, but further studies of higher air pollution levels are needed.
Year of Publication: 2012

9. **Aircraft noise and incidence of hypertension--gender specific effects.**
Authors
Eriksson, Charlotta. Bluhm, Gosta. Hilding, Agneta. Ostenson, Claes-Goran. Pershagen, Goran.
Institute of Environmental Medicine, Unit of Environmental Epidemiology, Karolinska Institutet, Nobels vag 13, SE-17177 Stockholm, Sweden. Charlotta.eriksson@ki.se
Comment in: Environ Res. 2011 Jan;111(1):186-7; PMID: 21092948
Source: Environmental Research. 110(8):764-72, 2010 Nov.
Abstract
Recent studies show associations between aircraft noise and cardiovascular outcomes such as hypertension. However, these studies were mostly cross-sectional and there are uncertainties regarding potential gender differences as well as sensitive subgroups. In this study, we investigated the cumulative incidence of hypertension in relation to aircraft noise exposure among Swedish men and women living in Stockholm County. A total of 4721 subjects, aged 35-56 at baseline, were followed for 8-10 years. The population was selected according to family history of diabetes, which was present for half of the subjects. The exposure assessment was performed by geographical information systems and based on residential history during the period of follow-up. Blood pressure was measured at baseline and at the end of follow-up. Additional information regarding diagnosis and treatment of hypertension as well as

various lifestyle factors was provided by questionnaires. In the overall population, no increased risk for hypertension was found among subjects exposed to aircraft noise = 50 dB(A) L(den); relative risk (RR) 1.02 (95% CI 0.90-1.15). When restricting the cohort to those not using tobacco at the blood pressure measurements, a significant risk increase per 5 dB(A) of aircraft noise exposure was found in men; RR 1.21 (1.05-1.39), but not in women; RR 0.97 (0.83-1.13). In both sexes combined, an increased risk of hypertension related to aircraft noise exposure was indicated primarily among those reporting annoyance to aircraft noise; RR 1.42 (1.11-1.82).
No consistent effect modification was detected for any of the cardiovascular risk factors under investigation although a family history of diabetes appeared to modify the risk in women.
In conclusion, the results suggest an increased risk of hypertension following long-term aircraft noise exposure in men, and that subjects annoyed by aircraft noise may be particularly sensitive to noise related hypertension. Copyright 2010 Elsevier Inc. All rights reserved.
Year of Publication: 2010

10. **Review of the effect of aircraft noise on sleep disturbance in adults. [Review]**
Authors: Perron S. Tetreault LF. King N. Plante C. Smargiassi A.
Departement of Social and Preventive Medicine, University of Montreal, Canada. sperron@santepub-mtl.qc.ca
Source: Noise & Health. 14(57):58-67, 2012 Mar-Apr.
Abstract
Noise exposure generated by air traffic has been linked with sleep disturbances. The purpose of this systematic review is to clarify whether there is a causal link between aircraft noise exposure and sleep disturbances. Only complete, peer-reviewed articles published in scientific journals were examined. Papers published until December 2010 were considered. To be included, articles had to focus on subjects aged 18 or over and include an objective evaluation of noise levels. Studies were classified according to quality. Given the paucity of studies with comparable outcome measures, we performed a narrative synthesis using a best-evidence synthesis approach. The primary study findings were tabulated. Similarities and differences between studies were investigated. Of the 12 studies surveyed that dealt with sleep disturbances, four were considered to be of high quality, five were considered to be of moderate quality and three were considered to be of low quality.
All moderate- to high-quality studies showed a link between aircraft noise events and sleep disturbances such as awakenings, decreased slow wave sleep time or the use of sleep medication. This review suggests that there is a causal relation between exposure to aircraft noise and sleep disturbances. However, the evidence comes mostly from experimental studies focusing on healthy adults. Further studies are necessary to determine the impact of aircraft noise on sleep disturbance for individuals more than 65 years old and for those with chronic diseases.
Year of Publication: 2012

11. **Cardiovascular effects of environmental noise: research in the United Kingdom. [Review]**
Authors: Stansfeld, Stephen. Crombie, Rosanna.
Queen Mary University of London, Barts and the London School of Medicine and Dentistry, Centre for Psychiatry, Wolfson Institute of Preventive Medicine, Charterhouse Square, London EC1M 6BQ, United Kingdom. s.a.stansfeld@qmul.ac.uk
Source: Noise & Health. 13(52):229-33, 2011 May-Jun.
Abstract
Although the auditory effects of noise on humans have been established, the non-auditory effects are not so well established. The emerging links between noise and cardiovascular disease (CVD) have potentially important implications on public health and policy. In the United Kingdom (UK), noise from transport is a problem, where more than half of the population is exposed to more than the

recommended maximum day-time noise level and just under three-quarters of the population live in areas where the recommended night-time noise level is exceeded.
This review focuses on findings from studies conducted in the UK that examined environmental noise and cardiovascular disease. There were statistically no significant associations between road traffic noise and incident ischemic heart disease in the Caerphilly and Speedwell studies, but there was a suggestion of effects when modifying factors such as length of residence, room orientation, and window opening were taken into account.
In a sample stratified by pre-existing disease a strongly increased odds of incident ischemic heart disease for the highest annoyance category was found compared to the lowest among men without pre-existing disease (OR = 2.45, 95%1.13 - 5.31), which was not found in men with pre-existing disease.
In the Hypertension and exposure to noise near airports (HYENA) study, night time aircraft noise exposure (L night) was associated with an increased risk of hypertension, in fully adjusted analyses. A 10-dB increase in aircraft noise exposure was associated with an odds ratio of 1.14 (95%CI, 1.01 - 1.29). Aircraft noise was not consistently related to raised systolic blood pressure in children in the road traffic and aircraft noise exposure and children's cognition and health (RANCH) study. There is some evidence of an association among environmental noise exposure and hypertension and ischemic heart disease in the UK studies; further studies are required to explore gender differences, the effects of day and night time exposure, and exposure modifying factors.
Year of Publication: 2011

12. **Effects of changed aircraft noise exposure on the use of outdoor recreational areas.**
Authors: Krog, Norun Hjertager. Engdahl, Bo. Tambs, Kristian.
Department of Air Pollution and Noise, Division of Environmental Medicine, Norwegian Institute of Public Health, PO Box 4404 Nydalen, N-0403 Oslo, Norway. norun.krog@fhi.no
Source: International Journal of Environmental Research & Public Health 7(11):3890-915, 2010 Nov.
Abstract
This paper examines behavioral responses to changes in aircraft noise exposure in local outdoor recreational areas near airports. Results from a panel study conducted in conjunction with the relocation of Norway's main airport in 1998 are presented. One recreational area was studied at each airport site. The samples (n = 1,264/1,370) were telephone interviewed about their use of the area before and after the change.
Results indicate that changed aircraft noise exposure may influence individual choices to use local outdoor recreational areas, suggesting that careful considerations are needed in the planning of air routes over local outdoor recreational areas.
Year of Publication: 2010

13. **Effects of changed aircraft noise exposure on experiential qualities of outdoor recreational areas.**
Authors: Krog, Norun Hjertager. Engdahl, Bo. Tambs, Kristian.
Department of Air Pollution and Noise, Division of Environmental Health, Norwegian Institute of Public Health, PO Box 4404 Nydalen, N-0403 Oslo, Norway. norun.krog@fhi.no
Source: International Journal of Environmental Research & Public Health 7(10):3739-59, 2010 Oct.
Abstract
The literature indicates that sound and visual stimuli interact in the impression of landscapes. This paper examines the relationship between annoyance with sound from aircraft and annoyance with other area problems (e.g., careless bicycle riding, crowding, etc.), and how changes in noise exposure influence the perceived overall recreational quality of outdoor recreational areas.
A panel study (telephone interviews) conducted before and after the relocation of Norway's main airport in 1998 examined effects of decreased or increased noise exposure in nearby recreational areas (n = 591/455).

Sound from aircraft annoyed the largest proportion of recreationists, except near the old airport after the change. The decrease in annoyance with sound from aircraft was accompanied by significant decreases in annoyance with most of the other area problems. Near the new airport annoyance with most factors beside sound from aircraft increased slightly, but not significantly. A relationship between aircraft noise annoyance and perceived overall recreational quality of the areas was found.
Year of Publication: 2010

14. **Exploring the relationship between noise sensitivity, annoyance and health-related quality of life in a sample of adults exposed to environmental noise.**
Authors: Shepherd, Daniel. Welch, David. Dirks, Kim N. Mathews, Renata.
Auckland University of Technology, Private Bag 92006, Auckland, 1142 New Zealand.
Source: International Journal of Environmental Research & Public Health 7(10):3579-94, 2010 Oct.
Abstract
The relationship between environmental noise and health is poorly understood but of fundamental importance to public health. This study estimated the relationship between noise sensitivity, noise annoyance and health-related quality of life in a sample of adults residing close to the Auckland International Airport, New Zealand. A small sample (n = 105) completed surveys measuring noise sensitivity, noise annoyance, and quality of life. Noise sensitivity was associated with health-related quality of life; annoyance and sleep disturbance mediated the effects of noise sensitivity on health.
Year of Publication: 2010

15. **Contributions of aircraft arrivals and departures to ultrafine particle counts near Los Angeles International Airport.**
Authors: leonhsu@mail.harvard.edu
Department of Environmental Health, Harvard School of Public Health, Boston, MA, USA.
Source: Science of the Total Environment. 444:347-55, 2013 Feb 1.
Abstract
BACKGROUND: While commercial aircraft are known Source: s of ultrafine particulate matter (UFP), the relationship between airport activity and local real-time UFP concentrations has not been quantified. Understanding these associations will facilitate interpretation of the exposure and health risk implications of UFP related to aviation emissions.

OBJECTIVES: We used time-resolved UFP data along with flight activity and meteorological information to determine the contributions of aircraft departures and arrivals to UFP concentrations.

METHODS: Aircraft flight activity and near-field continuous UFP concentrations (6 nm) were measured at five monitoring sites over a 42-day field campaign at Los Angeles International Airport (LAX). We developed regression models of UFP concentrations as a function of time-lagged landing and take-off operations (LTO) activity, in the form of arrivals or departures weighted by engine-specific estimates of fuel consumption.

RESULTS: Our regression models demonstrate a strong association between departures and elevated total UFP concentrations at the end of the departure runway, with diminishing magnitude and time-lagged impacts with distance from the Source: . LTO activity contributed a median (95th, 99th percentile) UFP concentration of approximately 150,000 particles/cm(3) (2,000,000, 7,100,000) at a monitor at the end of the departure runway, versus 19,000 particles/cm(3) (80,000, 140,000), and 17,000 particles/cm(3) (50,000, 72,000) for monitors 250 m and 500 m further downwind, respectively.

CONCLUSIONS: We demonstrated significant contributions from aircraft departure activities to UFP concentrations in close proximity to departure runways, with evidence of rapid plume evolution in the near field. Our methods can inform Source: attribution and interpretation of dispersion modeling outputs. Copyright 2012 Elsevier B.V. All rights reserved.
Year of Publication: 2013

16. **Risk assessment of aircraft noise on sleep in Montreal.**
Authors: Tetreault LF. Plante C. Perron S. Goudreau S. King N. Smargiassi A.
Departement de sante environnementale et sante au travail, Universite de Montreal, Montreal, QC.
Comment in: Can J Public Health. 2013 May-Jun;104(3):e275; PMID: 23823900, Comment in: Can J Public Health. 2013 May-Jun;104(3):e276; PMID: 23823901
Source: Canadian Journal of Public Health. 103(4):e293-6, 2012 Jul-Aug.
Abstract
OBJECTIVE: Estimate the number of awakenings additional to spontaneous awakenings, induced by the nighttime aircraft movements at an international airport in Montreal, in the population residing nearby in 2009.

METHODS: Maximum sound levels (LAS,max) were derived from aircraft movements using the Integrated Noise Model 7.0b, on a 28 x 28 km grid centred on the airport and with a 0.1 x 0.1 km resolution. Outdoor LAS,max were converted to indoor LAS,max by reducing noise levels by 15 dB(A) or 21 dB(A). For all grid points, LAS,max were transformed into probabilities of additional awakening using a function developed by Basner et al. (2006). The probabilities of additional awakening were linked to estimated numbers of exposed residents for each grid location to assess the number of aircraft-noise-induced awakenings in Montreal.

RESULTS: Using a 15 dB(A) sound attenuation, 590 persons would, on average, have one or more additional awakenings per night for the year 2009. In the scenario using a 21 dB(A) sound attenuation, on average, no one would be subjected to one or more additional awakenings per night due to aircraft noise.

CONCLUSION: Using the 2009 flight patterns, our data suggest that a small number of Montreal residents are exposed to noise levels that could induce one or more awakenings additional to spontaneous awakenings per night.
Year of Publication: 2012

17. **Airport environmental noise mapping and land use management as an environmental protection action policy tool. The case of the Larnaka International Airport (Cyprus).**
Authors: Vogiatzis, Konstantinos.
Faculty of Civil Engineering, Transportation Department, University of Thessaly, Pedion Areos, 383 34 Volos, Greece. kvogiatz@uth.gr
Source: Science of the Total Environment. 424:162-73, 2012 May 1.
Abstract
The evidence from epidemiological studies on the association between exposure to traffic and aircraft noise and hypertension and ischemic heart disease has increased during the recent years. Both road traffic and aircraft noise increase the risk of high blood pressure. Environmental noise mapping, as per the 2002/49/EC Directive, is an obligation of all European Union (EU) member states. In the framework of the present article a complete Strategic Noise Mapping research and Action Noise Plans assessment and evaluation are presented and aim to access land use management as an effective tool for protection from aircraft noise. The case of the Larnaka International Airport in Cyprus, a typical Mediterranean

airport, (considered as a "large airport" according to the above EU Directive and the recent Cyprus Legislation Law No. 224(I)/2004), is presented. In this paper a review of both assessment and action implementation procedures focusing on the dominant--in the area--aircraft traffic noise is presented, with emphasis to (a) a full calculation of Strategic Noise Map (SNM) scenarios of actual and future airport operation using the ECAC.CEAC Doc 29 methodology for both EU common indicators L(den) and L(night) in scales of 5 dB, (b) a full evaluation of results with emphasis to the Larnaka greater area land uses and the exposure of inhabitants in residences in various levels of environmental noise, and (c) a full evaluation of Noise Action Plans (NAP) introducing especially a new land use management scheme for the future Larnaka Town Land Use Plan. Copyright 2012 Elsevier B.V. All rights reserved.
Year of Publication: 2012

18. **Measuring subjective response to aircraft noise: the effects of survey context.**
Authors: Kroesen, Maarten. Molin, Eric J E. van Wee, Bert.
Delft University of Technology, Faculty of Technology, Policy and Management, P.O. Box 5015, 2600 GA Delft, The Netherlands. m.kroesen@tudelft.nl
Source: Journal of the Acoustical Society of America. 133(1):238-46, 2013 Jan.
Abstract
In applied research, noise annoyance is often used as indicator of subjective reaction to aircraft noise in residential areas. The present study aims to show that the meaning which respondents attach to the concept of aircraft noise annoyance is partly a function of survey context. To this purpose a survey is conducted among residents living near Schiphol Airport, the largest airport in the Netherlands. In line with the formulated hypotheses it is shown that different sets of preceding questionnaire items influence the response distribution of aircraft noise annoyance as well as the correlational patterns between aircraft noise annoyance and other relevant scales.
Year of Publication: 2013

19. **An algorithm to estimate aircraft cruise black carbon emissions for use in developing a cruise emissions inventory.**
Authors**:** Peck, Jay. Oluwole, Oluwayemisi O. Wong, Hsi-Wu. Miake-Lye, Richard C.
Center for Aero-Thermodynamics, Aerodyne Research, Inc., 45 Manning Road, Billerica, MA 01821, USA. jpeck@aerodyne.com
Source: Journal of the Air & Waste Management Association. 63(3):367-75, 2013 Mar.
Abstract
UNLABELLED: To provide accurate input parameters to the large-scale global climate simulation models, an algorithm was developed to estimate the black carbon (BC) mass emission index for engines in the commercial fleet at cruise. Using a high-dimensional model representation (HDMR) global sensitivity analysis, relevant engine specification/operation parameters were ranked, and the most important parameters were selected. Simple algebraic formulas were then constructed based on those important parameters. The algorithm takes the cruise power (alternatively, fuel flow rate), altitude, and Mach number as inputs, and calculates BC emission index for a given engine/airframe combination using the engine property parameters, such as the smoke number, available in the International Civil Aviation Organization (ICAO) engine certification databank. The algorithm can be interfaced with state-of-the-art aircraft emissions inventory development tools, and will greatly improve the global climate simulations that currently use a single fleet average value for all airplanes.

IMPLICATIONS: An algorithm to estimate the cruise condition black carbon emission index for commercial aircraft engines was developed. Using the ICAO certification data, the algorithm can evaluate the black carbon emission at given cruise altitude and speed.
Year of Publication: 2013

20. **Exposure modifiers of the relationships of transportation noise with high blood pressure and noise annoyance.**

Authors
Babisch W. Swart W. Houthuijs D. Selander J. Bluhm G. Pershagen G. Dimakopoulou K. Haralabidis AS. Katsouyanni K. Davou E. Sourtzi P. Cadum E. Vigna-Taglianti F. Floud S. Hansell AL.
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Source:
Journal of the Acoustical Society of America. 132(6):3788-808, 2012 Dec.

Abstract
In the cross-sectional hypertension and exposure to noise near airports study the relationship between road traffic noise, aircraft noise and hypertension and annoyance was investigated. The data collection comprised a variety of potentially exposure modifying factors, including type of housing, location of rooms, window opening habits, use of noise-reducing remedies, shielding due to obstacles, lengths of exposure. In the present paper the quantitative role of these factors on the relationship between road and aircraft noise exposure and outcomes was analyzed. Multiple logistic and linear regression models were calculated including these co-factors and related interaction terms with noise indicators, as well as stratified analyses. Type of housing, length of residence, location of rooms and the use of noise reducing remedies modified the relationship between noise and hypertension. However, the effects were not always in the direction of a stronger association in higher exposed subjects. Regarding annoyance, type of housing, location of rooms, noise barriers, window opening habits, noise insulation, the use of noise reducing remedies, hours spent at home during daytime were significant effect modifiers. The use of noise-reducing remedies turned out to be indicators of perceived noise disturbance rather than modifiers reducing the annoyance.

Year of Publication: 2012

21. **CO2, NOx, and particle emissions from aircraft and support activities at a regional airport.**

Authors: Klapmeyer, Michael E. Marr, Linsey C.
Department of Civil and Environmental Engineering, Virginia Tech, 418 Durham Hall, Blacksburg, Virginia, 24061, USA.

Source: Environmental Science & Technology. 46(20):10974-81, 2012 Oct 16.

Abstract
The goal of this research was to quantify emissions of carbon dioxide (CO(2)), nitrogen oxides (NO(x)), particle number, and black carbon (BC) from in-use aircraft and related activity at a regional airport. Pollutant concentrations were measured adjacent to the airfield and passenger terminal at the Roanoke Regional Airport in Virginia. Observed NO(x) emission indices (EIs) for jet-powered, commuter aircraft were generally lower than those contained in the International Civil Aviation Organization databank for both taxi (same as idle) and takeoff engine settings. NO(x) EIs ranged from 1.9 to 3.7 g (kg fuel)(-1) across five types of aircraft during taxiing, whereas EIs were consistently higher, 8.8-20.6 g (kg fuel)(-1), during takeoff. Particle number EIs ranged from 1.4 x 10(16) to 7.1 x 10(16) (kg fuel)(-1) and were slightly higher in taxi mode than in takeoff mode for four of the five types of aircraft. Diurnal patterns in CO(2) and NO(x) concentrations were influenced mainly by atmospheric conditions, while patterns in particle number concentrations were attributable mainly to patterns in aircraft activity. CO(2) and NO(x) fluxes measured by eddy covariance were higher at the terminal than at the airfield and were lower than found in urban areas.

Year of Publication: 2012

22. **Annoyance and other reaction measures to changes in noise exposure - a review. [Review]**
Authors: Laszlo HE. McRobie ES. Stansfeld SA. Hansell AL.
Imperial College London, MRC-HPA Centre for Environment and Health, St Mary's Campus, Norfolk Place, London, W2 1PG, UK. h.laszlo@imperial.ac.uk
Source: Science of the Total Environment. 435-436:551-62, 2012 Oct 1.
Abstract
INTRODUCTION: Noise is increasingly recognized as a potentially important environmental pollutant but most studies on human responses to noise exposure relate to steady state situations. Effects may differ when noise changes rapidly, e.g. after noise mitigation interventions or with changes in road or airport configurations.

METHODS: A systematic review of studies on human reactions to changes in environmental noise exposures published from 1980 to March 2011 was conducted.

RESULTS: 41 papers satisfied the inclusion criteria. The most commonly studied outcomes were annoyance (23 papers) and sleep disturbance (11 papers). Other reactions were well-being, activity disturbance and use of living environment. No studies including physiological or disease measures were identified. The most commonly used study design was a written survey. Studies were methodologically diverse and it was not possible to conduct a formal meta-analysis. Annoyance was not necessarily decreased by reducing noise exposure. Non-acoustical factors influenced annoyance ratings and some of these were not identical to those in steady state conditions. There was insufficient evidence to recommend sleep disturbance as an alternative measure of reactions in changed noise conditions.

CONCLUSIONS: Surveys of health effects in changed noise situations should be conducted both before and after the change. Annoyance as a reaction indicator should be evaluated with caution as non-acoustical factors play an important role in annoyance ratings. Technical interventions reducing noise levels may therefore not have impacts on annoyance proportionate to their impacts on sound levels. Further studies, investigating impacts on health endpoints (e.g. blood pressure) in changed noise situations are needed. Copyright 2012 Elsevier B.V. All rights reserved.
Year of Publication: 2012

23. **The impact of aircraft noise exposure on South African children's reading comprehension: the moderating effect of home language.**
Authors: Seabi, Joseph. Cockcroft, Kate. Goldschagg, Paul. Greyling, Mike.
Department of Psychology and the School of Education, University of the Witwatersrand, South Africa. joseph.seabi@wits.ac.za
Source: Noise & Health. 14(60):244-52, 2012 Sep-Oct.
Abstract
Given the limited studies conducted within the African continent, the purpose of this study was to investigate the impact of chronic aircraft noise exposure and the moderating effect of home language on the learners' reading comprehension. The sample comprised 437 (52%) senior primary learners exposed to high levels of aircraft noise (Experimental group) and 337 (48%) learners residing in a quieter area (Control group). Of these, 151 learners in the Experimental group spoke English as a first language (EFL) and 162 spoke English as a second language (ESL). In the Control group, the numbers were similarly divided (EFL n = 191; ESL n = 156). A univariate General Linear Model was used to investigate the effects of aircraft noise exposure and language on reading comprehension, while observing for the possible impact of intellectual ability, gender, and socioeconomic on the results. A significant difference was observed between ESL and EFL learners in favor of the latter (F 1,419 = 21.95, P =.000). In addition a substantial and significant interaction effect was found between the experimental and control groups

for the two language groups. For the EFL speakers there was a strong reduction in reading comprehension in the aircraft noise group. By contrast this difference was not significant for the ESL speakers. Implications of the findings and suggestions for further research are made in the article.
Year of Publication: 2012

24. **Effects of low intensity noise from aircraft or from neighbourhood on cognitive learning and electrophysiological stress responses.**
Authors: Trimmel, Michael. Atzlsdorfer, Jurgen. Tupy, Nina. Trimmel, Karin.
Medical University of Vienna, Vienna, Austria. michael.trimmel@meduniwien.ac.at
Source: International Journal of Hygiene & Environmental Health. 215(6):547-54, 2012 Nov.
Abstract
The effects of low intensity noise on cognitive learning and autonomous physiological processes are of high practical relevance but are rarely addressed in empirical investigations. This study investigated the impact of neighbourhood noise (of 45 dB[A], n=20) and of noise coming from passing aircraft (of 48 dB[A] peak amplitude presented once per minute; n=19) during computer based learning of different texts (with three types of text structure, i.e. linear text, hierarchic hypertext, and network hypertext) in relation to a control group (35 dB[A], n=20). Using a between subjects design, reproduction scores, heart rate, and spontaneous skin conductance fluctuations were compared. Results showed impairments of reproduction in both noise conditions. Additionally, whereas in the control group and the neighbourhood noise group scores were better for network hypertext structure than for hierarchic hypertext, no effect of text structure on reproduction appeared in the aircraft noise group. Compared to the control group, for most of the learning period the number of spontaneous skin conductance fluctuations was higher for the aircraft noise group. For the neighbourhood noise group, fluctuations were higher during pre- and post task periods when noise stimulation was still present. Additionally, during the last 5 min of the 15 min learning period, an increased heart rate was found in the aircraft noise group. Data indicate remarkable cognitive and physiological effects of low intensity background noise. Some aspects of reproduction were impaired in the two noise groups. Cognitive learning, as indicated by reproduction scores, was changed structurally in the aircraft noise group and was accompanied by higher sympathetic activity. An additional cardiovascular load appeared for aircraft noise when combined with time pressure as indicated by heart rate for the announced last 5 min of the learning period during aircraft noise with a peak SPL of even 48 dB(A). Attentional mechanisms (attentional control) like being threatened by passing aircraft approaching the airport, higher demands of selective filtering, and difficulties in changing cognitive strategies during noise are discussed as underlying mechanisms. Copyright 2011 Elsevier GmbH. All rights reserved.
Year of Publication: 2012

25. **Statistical approaches for identifying air pollutant mixtures associated with aircraft departures at Los Angeles International Airport.**
Authors: Diez, David M. Dominici, Francesca. Zarubiak, Darcy. Levy, Jonathan I.
Harvard School of Public Health, 655 Huntington Ave, SPH2, fourth Floor, Boston, Massachusetts 02115, USA. david.m.diez@gmail.com
Source: Environmental Science & Technology. 46(15):8229-35, 2012 Aug 7.
Abstract
Aircraft departures emit multiple pollutants common to other near-airport Source: s, making it challenging to determine relative Source: contributions. While there may not be unique tracers of aircraft emissions, examination of multi-pollutant concentration patterns in combination with flight activity can facilitate Source: attribution. In this study, we examine concentrations of continuously monitored air pollutants measured in 2008 near a departure runway at Los Angeles International Airport (LAX), considering single-pollutant associations with landing and takeoff (LTO) of the aircraft (LTO

activity, weighted by LTO cycle fuel burn), as well as multi-pollutant predictors of binary LTO activity. In the single-pollutant analyses, one-minute average concentrations of carbon monoxide, carbon dioxide, nitrogen oxides, and sulfur dioxide are positively associated with fuel burn-weighted departures on the runway proximate to the monitor, whereas ozone is negatively associated with fuel burn-weighted departures. In analyses in which the flight departure is predicted by pollutant concentrations, carbon dioxide and nitrogen oxides are the best individual predictors, but including all five pollutants greatly increases the power of prediction compared to single-pollutant models. Our results demonstrate that air pollution impacts from aircraft departures can be isolated using time-resolved monitoring data, and that combinations of simultaneously measured pollutants can best identify contributions from flight activity.
Year of Publication: 2012

26. **Occupational exposure to airborne particles and other pollutants in an aviation base.**
Authors: Buonanno, Giorgio. Bernabei, Manuele. Avino, Pasquale. Stabile, Luca.
Department of Civil and Mechanical Engineering, University of Cassino and Southern Lazio, Cassino, Italy. buonanno@unicas.it
Source: Environmental Pollution. 170:78-87, 2012 Nov.
Abstract
The occupational exposure to airborne particles and other pollutants in a high performance jet engine airport was investigated. Three spatial scales were considered: i) a downwind receptor site, ii) close to the airstrip, iii) personal monitoring. Particle number, surface area, mass concentrations and distributions were measured as well as inorganic and organic fractions, ionic fractions and Polycyclic Aromatic Hydrocarbons. Particle number distribution measured at a receptor site presents a mode of 80 nm and an average total concentration of 6.5 x 10(3) part. cm(-3); the chemical analysis shows that all the elements may be attributed to long-range transport from the sea. Particle number concentrations in the proximity of the airstrip show short term peaks during the working day mainly related to takeoff, landing and pre-flight operations of jet engines. Personal exposure of workers highlights a median number concentration of 2.5 x 10(4) part. cm(-3) and 1.7 x 10(4) part. cm(-3) for crew chief and hangar operator. Copyright 2012 Elsevier Ltd. All rights reserved.
Year of Publication: 2012

27. **Medication use in relation to noise from aircraft and road traffic in six European countries: results of the HYENA study.**
Authors
Floud S. Vigna-Taglianti F. Hansell A. Blangiardo M. Houthuijs D. Breugelmans O. Cadum E. Babisch W. Selander J. Pershagen G. Antoniotti MC. Pisani S. Dimakopoulou K. Haralabidis AS. Velonakis V. Jarup L. HYENA Study Team.
Department of Epidemiology and Biostatistics, School of Public Health, Imperial College London, Norfolk Place, London W21PG, UK. s.floud07@imperial.ac.uk
Source: Occupational & Environmental Medicine. 68(7):518-24, 2011 Jul.
Abstract
OBJECTIVES: Studies on the health effects of aircraft and road traffic noise exposure suggest excess risks of hypertension, cardiovascular disease and the use of sedatives and hypnotics. Our aim was to assess the use of medication in relation to noise from aircraft and road traffic.

METHODS: This cross-sectional study measured the use of prescribed antihypertensives, antacids, anxiolytics, hypnotics, antidepressants and antasthmatics in 4,861 persons living near seven airports in six European countries (UK, Germany, the Netherlands, Sweden, Italy, and Greece). Exposure was assessed using models with 1 dB resolution (5 dB for UK road traffic noise) and spatial resolution of

250x250 m for aircraft and 10x10 m for road traffic noise. Data were analysed using multilevel logistic regression, adjusting for potential confounders.

RESULTS: We found marked differences between countries in the effect of aircraft noise on antihypertensive use; for night-time aircraft noise, a 10 dB increase in exposure was associated with ORs of 1.34 (95% CI 1.14 to 1.57) for the UK and 1.19 (1.02 to 1.38) for the Netherlands but no significant associations were found for other countries. For day-time aircraft noise, excess risks were found for the UK (OR 1.35; CI: 1.13 to 1.60) but a risk deficit for Italy (OR 0.82; CI: 0.71 to 0.96). There was an excess risk of taking anxiolytic medication in relation to aircraft noise (OR 1.28; CI: 1.04 to 1.57 for daytime and OR 1.27; CI: 1.01 to 1.59 for night-time) which held across countries. We also found an association between exposure to 24hr road traffic noise and the use of antacids by men (OR 1.39; CI 1.11 to 1.74).

CONCLUSION: Our results suggest an effect of aircraft noise on the use of antihypertensive medication, but this effect did not hold for all countries. Results were more consistent across countries for the increased use of anxiolytics in relation to aircraft noise.
Year of Publication: 2011

28. **Epidemiological studies on noise and blood pressure in children: Observations and suggestions.**
Authors: Paunovic, Katarina. Stansfeld, Stephen. Clark, Charlotte. Belojevic, Goran.
Institute for Hygiene and Medical Ecology, School of Medicine, University of Belgrade, Belgrade, Serbia. paunkaya@gmail.com
Source: Environment International. 37(5):1030-41, 2011 Jul.
Abstract
OBJECTIVE: The goal of this review was to investigate methodological differences in studies on the effects of aircraft or road-traffic noise on blood pressure (BP) of urban children, emphasizing the similarities and differences in blood pressure measurements.

METHODS: A literature search has identified eight peer-reviewed studies, four conference proceedings and one PhD thesis on the effects of aircraft or road-traffic noise on children's blood pressure published in English in the last 30 years. Most of the studies were cross-sectional, and four studies were longitudinal, with follow-up period from one to three years. The studies were analyzed according to the following methodological issues: study design, children's characteristics, noise exposure assessment and blood pressure measurements. The effects of noise on systolic and diastolic pressure were presented in detail.

RESULTS: Studies on aircraft noise had more uniform methodology, indicating a slight tendency towards a positive relationship between aircraft noise exposure and BP in children. The studies on road-traffic noise were methodologically diverse, but compared to aircraft noise studies they showed a more uniform trend in the direction of a positive relationship with systolic BP. The time, place and number of BP measurements, as well as the devices and cuff sizes varied among the studies. Children's age, gender, body composition and ethnicity, and socio-economic remain the greatest Source: of diversity in BP values.

CONCLUSIONS: The reviewed studies were methodologically diverse concerning noise exposure assessment, BP measurement, study design and control for confounders. In spite of this, they indicate a tendency toward positive association between noise exposure and children's blood pressure. We recommended strategies that might help researchers adopt similar procedures when measuring BP in future field studies. Copyright 2011 Elsevier Ltd. All rights reserved.
Year of Publication: 2011

29. **Cardiovascular effects of environmental noise: research in Sweden. [Review]**

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Source: Noise & Health. 13(52):212-6, 2011 May-Jun.

Abstract

In Sweden, as in many other European countries, traffic noise is an important environmental health issue. At present, almost two million people are exposed to average noise levels exceeding the outdoor national guideline value (55 dB(A)). Despite efforts to reduce the noise burden, noise-related health effects, such as annoyance and sleep disturbances, are increasing.

Scientific interest regarding more serious health effects related to the cardiovascular system is growing, and several experimental and epidemiological studies have been performed or are ongoing. Most of the studies on cardiovascular outcomes have been related to noise from road or aircraft traffic. Few studies have included railway noise. The outcomes under study include morning saliva cortisol, treatment for hypertension, self-reported hypertension, and myocardial infarction.

Swedish studies on road traffic noise support the hypothesis of an association between long-term noise exposure and cardiovascular disease. However, the magnitude of effect varies between the studies and has been shown to depend on factors such as sex, number of years at residence, and noise annoyance. Two national studies have been performed on the cardiovascular effects of aircraft noise exposure. The first one, a cross-sectional study assessing self-reported hypertension, has shown a 30% risk increase per 5 dB(A) noise increase. The second one, which to our knowledge is the first longitudinal study assessing the cumulative incidence of hypertension, found a relative risk (RR) of 1.10 (95% CI 1.01 - 1.19) per 5 dB(A) noise increase. No associations have been found between railway noise and cardiovascular diseases. The findings regarding noise-related health effects and their economic consequences should be taken into account in future noise abatement policies and community planning.

Year of Publication: 2011

30. **Cardiovascular effects of environmental noise: research in Germany. [Review]**

Authors Maschke, Christian.
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Source: Noise & Health. 13(52):205-11, 2011 May-Jun.

Abstract

Research on systematic noise effects started in Germany back in the fifties with basic experimental studies on humans. As a result, noise was classified as a non-specific stressor, which could cause an ergotropic activation of the complete organism. In the light of this background research a hypothesis was proposed that long-term noise exposure could have an adverse effect on health. This hypothesis was further supported by animal studies.

Since the sixties, the adverse effects of chronic road traffic noise exposure were further examined in humans with the help of epidemiological studies. More epidemiological aircraft noise studies followed in the 1970s and thereafter. The sample size was increased, relevant confounding factors were taken into account, and the exposure and health outcomes were investigated objectively and with higher quality measures. To date, more than 20 German epidemiological traffic noise studies have focused on noise-induced health effects, mainly on the cardiovascular system.

The newer German noise studies demonstrate a clear association between residential exposure to traffic noise (particularly night noise) and cardiovascular outcomes. Nevertheless, additional research is needed, particularly on vulnerable groups and multiple noise exposures. The epidemiological findings have still not been fully considered in German regulations, particularly for aircraft noise.

The findings, however, were taken into account in national recommendations. The Federal Environment Agency recommends noise rating levels of 65 dB(A) for the day and 55 dB(A) for the night, as a short-term goal. In the medium term, noise rating levels of 60 / 50 (day, night) should be reached and noise rating levels of 55 / 45 in the long run.
Year of Publication: 2011

31. **Composition of smoke generated by landing aircraft.**
Authors: Bennett M. Christie SM. Graham A. Thomas BS. Vishnyakov V. Morris K. Peters DM. Jones R. Ansell C.
Centre for Aviation, Transport and the Environment, School of Science and the Environment, Manchester Metropolitan University , Chester Street, Manchester M1 5GD, UK. m.bennett@mmu.ac.uk
Source: Environmental Science & Technology. 45(8):3533-8, 2011 Apr 15.
Abstract
A combination of techniques has been used to examine the composition of smoke generated by landing aircraft. A sample of dust from the undercarriage from several commercial airliners was examined with SEM/EDX (Scanning Electron Microscope/Energy Dispersive X-ray) to determine its elemental composition and also with an aerosizer/aerodisperser in order to measure the particle size spectrum. The observed size spectrum was bimodal with equal numbers of particles at peaks of aerodynamic diameter ~10 um and ~50 um. The EDX analysis suggested that the former peak is carbonaceous, while the latter consists of elements typical of an asphalt concrete runway. In the field, a scanning Lidar, in combination with optical and condensation particle counters, was deployed to obtain limits to the number concentration and size of such particles. Most of the (strong) Lidar signal probably arose from the coarser 50 um aerosol, while respirable aerosol was too sparse to be detected by the optical particle counters.
Year of Publication: 2011

32. **Jet exhaust particles alter human dendritic cell maturation.**
Authors: Ferry, D. Rolland, C. Delhaye, D. Barlesi, F. Robert, P. Bongrand, P. Vitte, Joana.
Centre Interdisciplinaire de Nanoscience de Marseille CINaM CNRS UPR 3118, Universite Aix-Marseille 2, Campus de Luminy, case 913, 13288 Marseille Cedex 9, France. ferry@cinam.univ-mrs.fr
Source: Inflammation Research. 60(3):255-63, 2011 Mar.
Abstract
OBJECTIVE AND DESIGN: Among combustion-derived air pollutants, little is known about jet kerosene characteristics and effects.

MATERIALS AND METHODS: Particles yielded by experimental kerosene combustion in a jet engine were characterized with electron microscopy and X-ray energy dispersive spectroscopy. Immature human monocyte-derived dendritic cells were exposed for 18h to 10, 25 or 100ug/mL jet exhaust particles and/or Escherichia coli-derived endotoxin. Antigen-presenting and costimulation molecules (HLA DR, CD40, CD80, CD86, CD11c), tumor necrosis factor- and interleukin-10 production were measured.

RESULTS: The primary particles of jet exhaust are spherical (9.9nm), carbonaceous and exert an adjuvant effect on human monocyte-derived dendritic cell maturation in vitro. Concomitant particle and endotoxin stimulation induced a high cytokine production with low antigen-presenting molecules; particle contact prior to endotoxin contact led to an opposite phenotype. Finally, low cytokine production and high costimulation molecules were present when particle adjunction followed endotoxin contact.

CONCLUSIONS: Jet exhaust particles act as adjuvants to endotoxin-induced dendritic cell maturation, suggesting possible implications for human health and a role for the time pattern of infectious and pollutant interplay.
Year of Publication: 2011

33. **Aircraft noise and myocardial infarction mortality.**
Authors: Brink, Mark.
Comment on: Epidemiology. 2010 Nov;21(6):829-36; PMID: 20881600
Source: Epidemiology. 22(2):283; author reply 284, 2011 Mar.
Year of Publication: 2011

34. **Single and combined effects of air, road, and rail traffic noise on sleep and recuperation.**
Authors: Basner, Mathias. Muller, Uwe. Elmenhorst, Eva-Maria.
German Aerospace Center (DLR), Institute of Aerospace Medicine, Cologne, Germany. basner@mail.med.upenn.edu
Comment in: Sleep. 2011 Jan;34(1):7-8; PMID: 21203375
Source: Sleep. 34(1):11-23, 2011 Jan.
Abstract
STUDY OBJECTIVE: Traffic noise disturbs sleep and may impair recuperation. There is limited information on single and combined effects of air, road, and rail traffic noise on sleep and recuperation.
PARTICIPANTS: 72 healthy subjects, mean +/- standard deviation 40 +/- 13 years, range 18-71 years, 32 male.
INTERVENTIONS: Exposure to 40, 80, or 120 rail, road, and/or air traffic noise events.

MEASUREMENT AND RESULTS: Subjects were investigated for 11 consecutive nights, which included 8 noise exposure nights and one noise-free control night. Noise effects on sleep structure and continuity were subtle, even in nights with combined exposure, most likely because of habituation and an increase in arousal thresholds both within and across nights. However, cardiac arousals did not habituate across nights.
Noise exposure significantly affected subjective assessments of sleep quality and recuperation, whereas objective performance was unaffected, except for a small increase in mean PVT reaction time (+4 ms, adjusted P 0.05). Road traffic noise led to the strongest changes in sleep structure and continuity, whereas subjective assessments of sleep were worse after nights with air and rail traffic noise exposure. In contrast to daytime annoyance, cortical arousal probabilities and cardiac responses were significantly lower for air than for road and rail traffic noise (all P 0.0001). These differences were explained by sound pressure level rise time and high frequency (3 kHz) noise event components.

CONCLUSIONS: Road, rail, and air traffic noise differentially affect objective and subjective assessments of sleep. Differences in the degree of noise-induced sleep fragmentation between traffic modes were explained by the specific spectral and temporal composition of noise events, indicating potential targets for active and passive noise control. Field studies are needed to validate our findings in a setting with higher ecologic validity.
Year of Publication: 2011

35. **Nitrogen dioxide concentrations in neighborhoods adjacent to a commercial airport: a land use regression modeling study.**
Authors: Adamkiewicz G. Hsu HH. Vallarino J. Melly SJ. Spengler JD. Levy JI.
Department of Environmental Health, Harvard School of Public Health, 401 Park Drive, Boston, MA, USA. gadamkie@hsph.harvard.edu

Source: Environmental Health: A Global Access Science Source: . 9:73, 2010.
Abstract
BACKGROUND: There is growing concern in communities surrounding airports regarding the contribution of various emission Source: s (such as aircraft and ground support equipment) to nearby ambient concentrations. We used extensive monitoring of nitrogen dioxide (NO2) in neighborhoods surrounding T.F. Green Airport in Warwick, RI, and land-use regression (LUR) modeling techniques to determine the impact of proximity to the airport and local traffic on these concentrations.

METHODS: Palmes diffusion tube samplers were deployed along the airport's fence line and within surrounding neighborhoods for one to two weeks. In total, 644 measurements were collected over three sampling campaigns (October 2007, March 2008 and June 2008) and each sampling location was geocoded. GIS-based variables were created as proxies for local traffic and airport activity. A forward stepwise regression methodology was employed to create general linear models (GLMs) of NO2 variability near the airport. The effect of local meteorology on associations with GIS-based variables was also explored.

RESULTS: Higher concentrations of NO2 were seen near the airport terminal, entrance roads to the terminal, and near major roads, with qualitatively consistent spatial patterns between seasons. In our final multivariate model (R2 = 0.32), the local influences of highways and arterial/collector roads were statistically significant, as were local traffic density and distance to the airport terminal (all p 0.001). Local meteorology did not significantly affect associations with principal GIS variables, and the regression model structure was robust to various model-building approaches.

CONCLUSION: Our study has shown that there are clear local variations in NO2 in the neighborhoods that surround an urban airport, which are spatially consistent across seasons. LUR modeling demonstrated a strong influence of local traffic, except the smallest roads that predominate in residential areas, as well as proximity to the airport terminal.
Year of Publication: 2010

36. **Aircraft noise and quality of life around Frankfurt Airport.**
Authors: Schreckenberg, Dirk. Meis, Markus. Kahl, Cara. Peschel, Christin. Eikmann, Thomas.
ZEUS GmbH, Sennbrink 46, 58093 Hagen, Germany. schreckenberg@zeusgmbh.de
Source: International Journal of Environmental Research & Public Health 7(9):3382-405, 2010 Sep.
Abstract
In a survey of 2,312 residents living near Frankfurt Airport aircraft noise annoyance and disturbances as well as environmental (EQoL) and health-related quality of life (HQoL) were assessed and compared with data on exposure due to aircraft, road traffic, and railway noise. Results indicate higher noise annoyance than predicted from general exposure-response curves. Beside aircraft sound levels Source: -related attitudes were associated with reactions to aircraft noise. Furthermore, aircraft noise affected EQoL in general, although to a much smaller extent. HQoL was associated with aircraft noise annoyance, noise sensitivity and partly with aircraft noise exposure, in particular in the subgroup of multimorbid residents. The results suggest a recursive relationship between noise and health, yet this cannot be tested in cross-sectional studies. Longitudinal studies would be recommendable to get more insight in the causal paths underlying the noise-health relationship.
Year of Publication: 2010

37. **Aircraft noise, air pollution, and mortality from myocardial infarction.**
Authors: Huss A. Spoerri A. Egger M. Roosli M. Swiss National Cohort Study Group.
Institute of Social and Preventive Medicine (ISPM), University of Bern, Bern, Switzerland.

Comment in: Epidemiology. 2011 Mar;22(2):283; author reply 284; PMID: 21293213
Source: Epidemiology. 21(6):829-36, 2010 Nov.
Abstract
OBJECTIVE: Myocardial infarction has been associated with both transportation noise and air pollution. We examined residential exposure to aircraft noise and mortality from myocardial infarction, taking air pollution into account.

METHODS: We analyzed the Swiss National Cohort, which includes geocoded information on residence. Exposure to aircraft noise and air pollution was determined based on geospatial noise and air-pollution (PM10) models and distance to major roads. We used Cox proportional hazard models, with age as the timescale. We compared the risk of death across categories of A-weighted sound pressure levels (dB(A)) and by duration of living in exposed corridors, adjusting for PM10 levels, distance to major roads, sex, education, and socioeconomic position of the municipality.

RESULTS: We analyzed 4.6 million persons older than 30 years who were followed from near the end of 2000 through December 2005, including 15,532 deaths from myocardial infarction (ICD-10 codes I 21, I 22). Mortality increased with increasing level and duration of aircraft noise. The adjusted hazard ratio comparing =60 dB(A) with 45 dB(A) was 1.3 (95% confidence interval = 0.96-1.7) overall, and 1.5 (1.0-2.2) in persons who had lived at the same place for at least 15 years. None of the other endpoints (mortality from all causes, all circulatory disease, cerebrovascular disease, stroke, and lung cancer) was associated with aircraft noise.

CONCLUSION: Aircraft noise was associated with mortality from myocardial infarction, with a dose-response relationship for level and duration of exposure. The association does not appear to be explained by exposure to particulate matter air pollution, education, or socioeconomic of the municipality.
Year of Publication: 2010

38. **Night time aircraft noise exposure and children's cognitive performance.**
Authors: Stansfeld, Stephen. Hygge, Staffan. Clark, Charlotte. Alfred, Tamuno.
Centre for Psychiatry, Wolfson Institute of Preventive Medicine, Barts and the London School of Medicine, Old Anatomy Building, Charterhouse Square, London EC1M 6BQ, United Kingdom. s.a.stansfeld@qmul.ac.uk
Source: Noise & Health. 12(49):255-62, 2010 Oct-Dec.
Abstract
Chronic aircraft noise exposure in children is associated with impairment of reading and long-term memory. Most studies have not differentiated between day or nighttime noise exposure. It has been hypothesized that sleep disturbance might mediate the association of aircraft noise exposure and cognitive impairment in children. This study involves secondary analysis of data from the Munich Study and the UK Road Traffic and Aircraft Noise Exposure and Children's Cognition and Health (RANCH) Study sample to test this. In the Munich study, 330 children were assessed on cognitive measures in three measurement waves a year apart, before and after the switchover of airports. Self-reports of sleep quality were analyzed across airports, aircraft noise exposure and measurement wave to test whether changes in nighttime noise exposure had any effect on reported sleep quality, and whether this showed the same pattern as for changes in cognitive performance. For the UK sample of the RANCH study, night noise contour information was linked to the children's home and related to sleep disturbance and cognitive performance. In the Munich study, analysis of sleep quality questions showed no consistent interactions between airport, noise, and measurement wave, suggesting that poor sleep quality does

not mediate the association between noise exposure and cognition. Daytime and nighttime aircraft noise exposure was highly correlated in the RANCH study.
Although night noise exposure was significantly associated with impaired reading and recognition memory, once home night noise exposure was centered on daytime school noise exposure, night noise had no additional effect to daytime noise exposure. These analyses took advantage of secondary data available from two studies of aircraft noise and cognition. They were not initially designed to examine sleep disturbance and cognition, and thus, there are methodological limitations which make it less than ideal in giving definitive answers to these questions. In conclusion, results from both studies suggest that night aircraft noise exposure does not appear to add any cognitive performance decrement to the cognitive decrement induced by daytime aircraft noise alone. We suggest that the school should be the main focus of attention for protection of children against the effects of aircraft noise on school performance.
Year of Publication: 2010

39. **The effects of road traffic and aircraft noise exposure on children's episodic memory: the RANCH project.**
Authors: Matheson M. Clark C. Martin R. van Kempen E. Haines M. Barrio IL. Hygge S. Stansfeld S.
Centre for Psychiatry, Wolfson Institute of Preventive Medicine, Barts and the London School of Medicine and Dentistry, Queen Mary University of London, Old Anatomy Building, Charterhouse Square, London EC1M 6BQ, United Kingdom.
Source: Noise & Health. 12(49):244-54, 2010 Oct-Dec.
Abstract
Previous studies have found that chronic exposure to aircraft noise has a negative effect on children's performance on tests of episodic memory. The present study extended the design of earlier studies in three ways: firstly, by examining the effects of two noise Source: s, aircraft and road traffic, secondly, by examining exposure-effect relationships, and thirdly, by carrying out parallel field studies in three European countries, allowing cross-country comparisons to be made. A total of 2844 children aged between 8 years 10 months and 12 years 10 months (mean age 10 years 6 months) completed classroom-based tests of cued recall, recognition memory and prospective memory. Questionnaires were also completed by the children and their parents in order to provide information about socioeconomic context. Multilevel modeling analysis revealed aircraft noise to be associated with an impairment of recognition memory in a linear exposure-effect relationship. The analysis also found road traffic noise to be associated with improved performance on cued recall in a linear exposure-effect relationship. No significant association was found between exposure to aircraft noise and cued recall or prospective memory. Likewise, no significant association was found between road traffic noise and recognition or prospective memory. Taken together, these findings indicate that exposure to aircraft noise and road traffic noise can impact on certain aspects of children's episodic memory.
Year of Publication: 2010

40. **Effects of nocturnal aircraft noise on cognitive performance in the following morning: dose-response relationships in laboratory and field.**
Authors
Elmenhorst EM. Elmenhorst D. Wenzel J. Quehl J. Mueller U. Maass H. Vejvoda M. Basner M.
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Source: International Archives of Occupational & Environmental Health. 83(7):743-51, 2010 Oct.
Abstract

OBJECTIVE: Nocturnal aircraft noise disturbs sleep and impairs recuperation. We investigated in laboratory and field studies whether noise-induced sleep fragmentation is associated with performance impairments in a psychomotor vigilance task (PVT) and a memory search task.

METHODS: In the laboratory, 112 participants were exposed to aircraft noise during 9 consecutive nights. In the field, 64 participants were examined during 9 consecutive nights in the vicinity of Cologne/Bonn airport. Reaction time, signal detection performance and subjective task load were recorded.

RESULTS: Dose-response relationships showed significant, linear impairments in reaction times. In the laboratory, reaction time in PVT increased with 0.13 ms/dB equivalent noise level (LAeq) plus 0.02 ms/noise event. In the field study, reaction time increased with 0.3 ms/dB LAeq. Participants worked significantly less accurate after nocturnal noise exposure.

CONCLUSION: Influences of LAeq and number of noise events on daytime performance were small but consistent and significant, stressing the potential public health impact of nocturnal noise exposure.
Year of Publication: 2010

41. **Neurobehavioral effects of transportation noise in primary schoolchildren: a cross-sectional study.**
Authors
van Kempen, Elise. van Kamp, Irene. Lebret, Erik. Lammers, Jan. Emmen, Harry. Stansfeld, Stephen.
National Institute for Public Health and the Environment, Centre for Environmental Health Research, Bilthoven, The Netherlands. Elise.van.Kempen@rivm.nl

Source: Environmental Health: A Global Access Science Source: . 9:25, 2010.
Abstract
BACKGROUND: Due to shortcomings in the design, no Source: -specific exposure-effect relations are as yet available describing the effects of noise on children's cognitive performance. This paper reports on a study investigating the effects of aircraft and road traffic noise exposure on the cognitive performance of primary schoolchildren in both the home and the school setting.

METHODS: Participants were 553 children (age 9-11 years) attending 24 primary schools around Schiphol Amsterdam Airport. Cognitive performance was measured by the Neurobehavioral Evaluation System (NES), and a set of paper-and-pencil tests. Multilevel regression analyses were applied to estimate the association between noise exposure and cognitive performance, accounting for demographic and school related confounders.

RESULTS: Effects of school noise exposure were observed in the more difficult parts of the Switching Attention Test (SAT): children attending schools with higher road or aircraft noise levels made significantly more errors. The correlational pattern and factor structure of the data indicate that the coherence between the neurobehavioral tests and paper-and-pencil tests is high.

CONCLUSIONS: Based on this study and previous scientific literature it can be concluded that performance on simple tasks is less susceptible to the effects of noise than performance on more complex tasks.
Year of Publication: 2010

42. **Source: proximity and residential outdoor concentrations of PM(2.5), OC, EC, and PAHs.**
Authors: Polidori, A. Kwon, J. Turpin, B J. Weisel, C.

Department of Civil and Environmental Engineering, University of Southern California, Los Angeles, California 90089, USA.
Source: Journal of Exposure Science & Environmental Epidemiology. 20(5):457-68, 2010 Jul.
Abstract
We examined the effect of proximity to specific mobile, area, and point Source: s on the residential outdoor concentrations of fine particulate matter PM (PM(2.5)) and several of its particle components. Integrated (48-h) PM(2.5) samples were collected outside non-smoking residences in Elizabeth, NJ, between summer 1999 and spring 2001. Samples were analyzed for PM(2.5) mass, organic and elemental carbon (OC and EC, respectively), trace elements, particle-phase polycyclic aromatic hydrocarbons (p-PAHs), and other important particle species. Information about the proximity of the study homes to potential mobile and area Source: s of OC, EC, p-PAHs, sulfur (S), and selenium (Se) (including urban interstate highways, local roadways, the Newark International Airport, the Elizabeth seaport, and a nearby refinery in Linden, NJ) were retrieved from a database that included detailed emissions, meteorological, and geographical data for the study area. The dependence of residential outdoor concentrations on Source: proximity and on various meteorological parameters was then examined for each species by multiple linear regression analysis. As expected, the predicted ambient air concentrations of all particle species (except S, Se) decreased with increasing distance from the Source: s. Although the enhancement in PM(2.5) and OC levels outside the study homes closest to primary PM Source: s was modest (e.g., 1.6 and 2.5 times the background levels 37 m from interstate highways), the elevation of EC and p-PAH concentrations was substantial outside the closest study homes (i.e., about 20 times for p-PAHs 37 m from interstate highways and about 14 times for EC 192 m from the refinery in Linden, NJ). The predicted EC concentrations 192 and 500 m from the oil refinery were 22.8 and 3.0 microgC/m(3), compared with an urban background of 1 microgC/m(3). Thus, emissions from this Source: might dramatically affect EC exposure for residents living in its close proximity.
Year of Publication: 2010

43. **Sleep disturbance due to aircraft noise exposure.**
Authors: Finegold, Lawrence S. 1167 Bournemouth Court, Centerville, OH 45459, USA.
Source: Noise & Health. 12(47):88-94, 2010 Apr-Jun.
Abstract
Research on nighttime sleep disturbance due to community noise Source: s, particularly from exposure to aircraft noise, has been conducted for over a half decade. However, there are still no national environmental noise policies (i.e., laws and regulations) promulgated which prescribe a specific criterion for an exposure limit which is regulatory in nature. In the U.S., the new American National Standards Institute (ANSI) Noise Standard, ANSI S12.9-2008/Part 6, Quantities and Procedures for Description and Measurement of Environmental Sound - Part 6: Methods for Estimation of Awakenings Associated with Outdoor Noise Events Heard in Homes, does provide the currently recommended exposure-response relationship used in the U.S. In Europe, there has also been significant laboratory and field research on sleep disturbance, although the U.S. and European research publications often use different research methodologies, different noise metrics and different meta-analysis techniques. The current article will provide a brief overview of sleep disturbance research internationally to document the similarities and differences between the various research approaches and research results.
Year of Publication: 2010

44. **Sleep disturbance due to noise: current issues and future research. [Review] [24 refs]**
Authors: Hume, Ken.
Division of Health Science and Centre for Air Transport and the Environment, Manchester Metropolitan University, United Kingdom.
Source: Noise & Health. 12(47):70-6, 2010 Apr-Jun.

Abstract
There is growing interest in carrying out further research to understand and reduce the impact of aircraft noise on airport neighborhood in anticipation of the projected substantial increase in global aviation. Soundscapes provide new analytical methods and a broader, more comprehensive appreciation of the aural environment, which may have a useful role in understanding noise-induced sleep disturbance and annoyance. Current noise metrics like Leq do not provide a common language to report noise environment to residents, which is a key obstacle to effective noise management and acceptance. Non-auditory effects complicate the production of consistent dose-response functions for aircraft noise affecting sleep and annoyance. There are various end-points that can be chosen to assess the degree of sleep disturbance, which has detracted from the clarity of results that has been communicated to wider audiences. The World Health Organization (WHO-Europe) has produced Night Noise Guidelines for Europe, which act as a clear guide for airports and planners to work towards. Methodological inadequacies and the need for simpler techniques to record sleep will be considered with the exciting potential to greatly increase cost-effective field data acquisition, which is needed for large scale epidemiological studies. [References: 24]
Year of Publication: 2010

45. **Concentrations, Source: s and geochemistry of airborne particulate matter at a major European airport.**

Authors
Amato F. Moreno T. Pandolfi M. Querol X. Alastuey A. Delgado A. Pedrero M. Cots N.
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Source: Journal of Environmental Monitoring. 12(4):854-62, 2010 Apr.
Abstract
Monitoring of aerosol particle concentrations (PM(10), PM(2.5), PM(1)) and chemical analysis (PM(10)) was undertaken at a major European airport (El Prat, Barcelona) for a whole month during autumn 2007. Concentrations of airborne PM at the airport were close to those at road traffic hotspots in the nearby Barcelona city, with means measuring 48 microg PM(10)/m(3), 21 microg PM(2.5)/m(3) and 17 microg PM(1)/m(3). Meteorological controls on PM at El Prat are identified as cleansing daytime sea breezes with abundant coarse salt particles, alternating with nocturnal land-Source: d winds which channel air polluted by industry and traffic (PM(1)/PM(10) ratios 0.5) SE down the Llobregat Valley. Chemical analyses of the PM(10) samples show that crustal PM is dominant (38% of PM(10)), followed by total carbon (OC + EC, 25%), secondary inorganic aerosols (SIA, 20%), and sea salt (6%). Local construction work for a new airport terminal was an important contributor to PM(10) crustal levels. Source: apportionment modelling PCA-MLRA identifies five factors: industrial/traffic, crustal, sea salt, SIA, and K(+) likely derived from agricultural biomass burning. Whereas most of the atmospheric contamination concerning ambient air PM(10) levels at El Prat is not attributable directly to aircraft movement, levels of carbon are unusually high (especially organic carbon), as are metals possibly Source: d from tyre detritus/smoke in runway dust (Ba, Zn, Mo) and from brake dust in ambient PM(10) (Cu, Sb), especially when the airport is at its most busy. We identify microflakes of aluminous alloys in ambient PM(10) filters derived from corroded fuselage and wings as an unequivocal and highly distinctive tracer for aircraft movement.
Year of Publication: 2010

46. **The associations between noise sensitivity, reported physical and mental health, perceived environmental quality, and noise annoyance.**

Authors: Schreckenberg, Dirk. Griefahn, Barbara. Meis, Markus.
ZEUS GmbH, Sennbrink 46, 58093 Hagen, Germany. schreckenberg@zeusgmbh.de

Source: Noise & Health. 12(46):7-16, 2010 Jan-Mar.
Abstract
One hundred and ninety residents around Frankfurt Airport (46% female; 17-80 years) were interviewed concerning noise annoyance due to transportation noise (aircraft, road traffic), perceived mental and physical health, perceived environmental quality, and noise sensitivity. The aim of the analyses was to test whether noise sensitivity reflects partly general environmental sensitivity and is associated with an elevated susceptibility for the perception of mental and physical health. In this study, the reported physical and mental health variables were not associated with noise exposure but with noise annoyance, and were interpreted to reflect nonspecific codeterminants of annoyance rather than noise effects. Noise sensitivity was found to influence total noise annoyance and aircraft noise annoyance but to a lesser degree annoyance due to road traffic noise. Noise sensitivity was associated with reported physical health, but not with reported mental health. Noise-sensitive persons reported poorer environmental quality in their residential area than less sensitive persons in particular with regard to air traffic (including the facets noise, pollution, and contaminations) and quietness. Other aspects of the perceived quality of the environment were scarcely associated with noise sensitivity. This indicates that noise sensitivity is more specific and a reliable predictor of responses to noise from the dominant Source: (in this case air traffic) rather than a predictor of the individual perception of the environmental quality in general.
Year of Publication: 2010

47. **Saliva cortisol and exposure to aircraft noise in six European countries.**
Authors
Selander J. Bluhm G. Theorell T. Pershagen G. Babisch W. Seiffert I. Houthuijs D. Breugelmans O. Vigna-Taglianti F. Antoniotti MC. Velonakis E. Davou E. Dudley ML. Jarup L. HYENA Consortium.
Institute of Environmental Medicine, Karolinska Institutet, Stockholm, Sweden. jenny.selander@ki.se
Source: Environmental Health Perspectives. 117(11):1713-7, 2009 Nov.
Abstract
BACKGROUND: Several studies show an association between exposure to aircraft or road traffic noise and cardiovascular effects, which may be mediated by a noise-induced release of stress hormones.

OBJECTIVE: Our objective was to assess saliva cortisol concentration in relation to exposure to aircraft noise.

METHOD: A multicenter cross-sectional study, HYENA (Hypertension and Exposure to Noise near Airports), comprising 4,861 persons was carried out in six European countries. In a subgroup of 439 study participants, selected to enhance the contrast in exposure to aircraft noise, saliva cortisol was assessed three times (morning, lunch, and evening) during 1 day.

RESULTS: We observed an elevation of 6.07 nmol/L [95% confidence interval (CI), 2.32-9.81 nmol/L] in morning saliva cortisol level in women exposed to aircraft noise at an average 24-hr sound level (L(Aeq,24h)) 60 dB, compared with women exposed to L(Aeq,24h) or = 50 dB, corresponding to an increase of 34%. Employment appeared to modify the response. We found no association between noise exposure and saliva cortisol levels in men.

CONCLUSIONS: Our results suggest that exposure to aircraft noise increases morning saliva cortisol levels in women, which could be of relevance for noise-related cardiovascular effects.
Year of Publication: 2009

48. **Aircraft emission impacts in a neighborhood adjacent to a general aviation airport in southern California.**

Authors
Hu, Shishan. Fruin, Scott. Kozawa, Kathleen. Mara, Steve. Winer, Arthur M. Paulson, Suzanne E.
Department of Atmospheric and Oceanic Sciences, University of California, Los Angeles, California 90095-1565, USA.

Source: Environmental Science & Technology. 43(21):8039-45, 2009 Nov 1.

Abstract
Real time air pollutant concentrations were measured downwind of Santa Monica Airport (SMA), using an electric vehicle mobile platform equipped with fast response instruments in spring and summer of 2008. SMA is a general aviation airport operated for private aircraft and corporate jets in Los Angeles County, California. An impact area of elevated ultrafine particle (UFP) concentrations was observed extending beyond 660 m downwind and 250 m perpendicular to the wind on the downwind side of SMA. Aircraft operations resulted in average UFP concentrations elevated by factors of 10 and 2.5 at 100 and 660 m downwind, respectively, over background levels. The long downwind impact distance (i.e., compared to nearby freeways at the same time of day) is likely primarily due to the large volumes of aircraft emissions containing higher initial concentrations of UFP than on-road vehicles. Aircraft did not appreciably elevate average levels of black carbon (BC), particle-bound polycyclic aromatic hydrocarbons (PB-PAH), although spikes in concentration of these pollutants were observed associated with jet takeoffs. Jet departures resulted in peak 60-s average concentrations of up to 2.2 x 10(6) cm(-3), 440 ng m(-3), and 30 microg m(-3) for UFP, PB-PAH, and BC, respectively, 100 m downwind of the takeoff area. These peak levels were elevated by factors of 440, 90, and 100 compared to background concentrations. Peak UFP concentrations were reasonably correlated (r(2) = 0.62) with fuel consumption rates associated with aircraft departures, estimated from aircraft weights and acceleration rates. UFP concentrations remained elevated for extended periods associated particularly with jet departures, but also with jet taxi and idle, and operations of propeller aircraft. UFP measured downwind of SMA had a median mode of about 11 nm (electric mobility diameter), which was about half of the 22 nm median mode associated with UFP from heavy duty diesel trucks. The observation of highly elevated ultrafine particle concentrations in a large residential area downwind of this local airport has potential health implications for persons living near general aviation airports.

Year of Publication: 2009

49. **Annoyance due to aircraft noise has increased over the years--results of the HYENA study.**

Authors
Babisch W. Houthuijs D. Pershagen G. Cadum E. Katsouyanni K. Velonakis M. Dudley ML. Marohn HD. Swart W. Breugelmans O. Bluhm G. Selander J. Vigna-Taglianti F. Pisani S. Haralabidis A. Dimakopoulou K. Zachos I. Jarup L. HYENA Consortium.
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Source: Environment International. 35(8):1169-76, 2009 Nov.

Abstract
In the HYENA study (HYpertension and Exposure to Noise near Airports) noise annoyances due to aircraft and road traffic noise were assessed in subjects that lived in the vicinity of 6 major European airports using the 11-point ICBEN scale (International Commission on Biological Effects of Noise). A distinction was made between the annoyance during the day and during the night. L(den) and L(night) were considered as indicators of noise exposure. Pooled data analyses showed clear exposure-response relationships between the noise level and the noise annoyance for both exposures. The exposure-response curves for road noise were congruent with the EU standard curves used for predicting the number of highly noise annoyed subjects in European communities.

Annoyance ratings due to aircraft noise, however, were higher than predicted by the EU standard curves. The data supports other findings suggesting that the people's attitude towards aircraft noise has changed over the years, and that the EU standard curve for aircraft noise should be modified.
Year of Publication: 2009

50. **Exposure-response relationship of the association between aircraft noise and the risk of hypertension.** [Review] [89 refs]
Authors: Babisch, Wolfgang. Kamp, Irene van.
Department of Environmental Hygiene, Federal Environment Agency, Germany. wolfgang.babisch@uba.de
Source: Noise & Health. 11(44):161-8, 2009 Jul-Sep.
Abstract
Noise is a stressor that affects the autonomic nervous system and the endocrine system. Under conditions of chronic noise stress the cardiovascular system may adversely be affected. Epidemiological noise studies regarding the relationship between aircraft noise and cardiovascular effects have been carried out on adults and on children focussing on mean blood pressure, hypertension and ischemic heart diseases as cardiovascular endpoints. While there is evidence that road traffic noise increases the risk of ischemic heart disease, including myocardial infarction, there is less such evidence for such an association with aircraft noise. This is partly due to the fact that large scale clinical studies are missing. There is sufficient qualitative evidence, however, that aircraft noise increases the risk of hypertension in adults. Regarding aircraft noise and children's blood pressure the results are still inconsistent. The available literature was evaluated for the WHO working group on "Aircraft Noise and Health" based on the experts' comprehensive knowledge in this field. With respect to the needs of a quantitative risk assessment for burden of disease calculations an attempt was made to derive an exposure-response relationship based on a meta-analysis. This association must be viewed as preliminary due to limitations which are concerned with the pooling of studies due to methodological differences in the assessment of exposure and outcome between studies. More studies are needed to establish better estimates of the risk. [References: 89]
Year of Publication: 2009

51. **Between-airport heterogeneity in air toxics emissions associated with individual cancer risk thresholds and population risks.**
Authors: Zhou, Ying. Levy, Jonathan I.
Department of Environmental and Occupational Health, Rollins School of Public Health, Emory University, 1518 Clifton Road NE, Atlanta, Georgia 30322, USA. ying.zhou@emory.edu
Source: Environmental Health: A Global Access Science Source: . 8:22, 2009.
Abstract
BACKGROUND: Airports represent a complex Source: type of increasing importance contributing to air toxics risks. Comprehensive atmospheric dispersion models are beyond the scope of many applications, so it would be valuable to rapidly but accurately characterize the risk-relevant exposure implications of emissions at an airport.

METHODS: In this study, we apply a high resolution atmospheric dispersion model (AERMOD) to 32 airports across the United States, focusing on benzene, 1,3-butadiene, and benzo [a]pyrene. We estimate the emission rates required at these airports to exceed a 10(-6) lifetime cancer risk for the maximally exposed individual (emission thresholds) and estimate the total population risk at these emission rates.

RESULTS: The emission thresholds vary by two orders of magnitude across airports, with variability predicted by proximity of populations to the airport and mixing height (R2 = 0.74-0.75 across pollutants). At these emission thresholds, the population risk within 50 km of the airport varies by two orders of magnitude across airports, driven by substantial heterogeneity in total population exposure per unit emissions that is related to population density and uncorrelated with emission thresholds.

CONCLUSION: Our findings indicate that site characteristics can be used to accurately predict maximum individual risk and total population risk at a given level of emissions, but that optimizing on one endpoint will be non-optimal for the other.
Year of Publication: 2009

52. **Aircraft hydrocarbon emissions at Oakland International Airport.**
Authors
Herndon SC. Wood EC. Northway MJ. Miake-Lye R. Thornhill L. Beyersdorf A. Anderson BE. Dowlin R. Dodds W. Knighton WB.
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Source: Environmental Science & Technology. 43(6):1730-6, 2009 Mar 15.
Abstract
To help airports improve emission inventory data, speciated hydrocarbon emission indices have been measured from in-use commercial, airfreight, and general aviation aircraft at Oakland International Airport. The compounds reported here include formaldehyde, acetaldehyde, ethene, propene, and benzene. At idle, the magnitude of hydrocarbon emission indices was variable and reflected differences in engine technology, actual throttle setting, and ambient temperature. Scaling the measured emission indices to the simultaneously measured formaldehyde (HCHO) emission index eliminated most of the observed variability. This result supports a uniform hydrocarbon emissions profile across engine types when the engine is operating near idle, which can greatly simplify how speciated hydrocarbons are handled in emission inventories. The magnitude of the measured hydrocarbon emission index observed in these measurements (ambient temperature range 12-22 degrees C) is a factor of 1.5-2.2 times larger than the certification benchmarks. Using estimates of operational fuel flow rates at idle, this analysis suggests that current emission inventories at the temperatures encountered at this airport underestimate hydrocarbon emissions from the idle phase of operation by 16-45%.
Year of Publication: 2009

53. **The effects of chronic exposure to aircraft noise on the prevalence of hypertension.**
Authors
Rhee, Moo-Yong. Kim, Hae-Young. Roh, Sang-Chul. Kim, Hyun-Joo. Kwon, Ho-Jang.
Division of Cardiology, Department of Internal Medicine, College of Medicine, Dongguk University, Gyeongju, Korea. rheemy@dongguk.ac.kr
Source: Hypertension Research - Clinical & Experimental. 31(4):641-7, 2008 Apr.
Abstract
Exposure to environmental noise has been suggested to increase the prevalence of hypertension. The present study investigated whether or not chronic exposure to military aircraft noise is related to an increased prevalence of hypertension. The study population consisted of 137 subjects (mean age 60+/-14 years) who lived within 5 km of a helicopter airbase and 486 subjects (58+/-16 years) living within 5 km of a fighter-jet airbase. A control group consisted of 252 subjects (58+/-16 years) not exposed to aircraft noise. Overall, the subjects exposed to military aircraft noise had a higher prevalence of hypertension than those in the control group (p=0.037). However, whereas those exposed to helicopter noise had a higher prevalence than the control group (p=0.020), those exposed to fighter-jet noise did not (p=0.094). The prevalence of known hypertension in the helicopter group was higher than in the

control group (p=0.024). The prevalence odds ratio for hypertension adjusted for age, gender, body mass index, current smoking, alcohol intake, diabetes, and regular exercise was 1.62 (95% confidence interval [95% CI], 1.02-2.59) for the subjects exposed to helicopter noise, and 1.23 (95% CI, 0.87-1.74) for those exposed to fighter-jet noise. In conclusion, the results of the present study suggest that chronic exposure to military aircraft noise may be associated with hypertension. The difference in the effects between helicopter and fighter-jet noise implies that different kinds of noise will have different influences on the prevalence of hypertension.
Year of Publication: 2008

54. **Residential proximity to large airports and potential health impacts in New York State.**
Authors: Lin, S. Munsie, J P. Herdt-Losavio, M. Hwang, S A. Civerolo, K. McGarry, K. Gentile, T.
Center for Environmental Health, New York State Department of Health, 547 River Street, Room 200, Troy, NY 12180, USA. sxl05@health.state.ny.us
Source: International Archives of Occupational & Environmental Health. 81(7):797-804, 2008 Jul.
Abstract
OBJECTIVE: This study assessed whether residents living near commercial airports have increased rates of hospital admissions due to respiratory diseases compared to those living farther away from these airports.
METHODS: This cross-sectional study included all residents living within 12 miles from the center of each three airports (Rochester in Rochester, LaGuardia in New York City and MacArthur in Long Island). We obtained hospital admission data collected by the NYS Department of Health for all eligible residents who were admitted for asthma, chronic bronchitis, emphysema, chronic obstructive pulmonary disease and, for children aged 0-4 years, bronchitis and bronchiolitis during 1995-2000. Exposure indicators were distance from the airport (or =5 miles versus 5 miles) and dominant wind-flow patterns from the airport (75th percentile versus or =75th percentile), as well as their combinations.

RESULTS: Increased relative risks of hospital admissions for respiratory conditions were found for residents living within 5 miles from the airports (1.47; 95% CI 1.41, 1.52 for Rochester and 1.38; 95% CI 1.37, 1.39 for LaGuardia) compared to those living 5 miles. We did not find positive associations between wind-flow patterns and respiratory hospital admissions among the residents in any airport vicinity. No differences were observed for MacArthur airport using either exposure measure.
CONCLUSION: There is the suggestion that residential proximity to some airports may increase hospital admissions for respiratory disorders. However, there are many factors that could influence this association that may differ by airport, which should be measured and studied further.
Year of Publication: 2008

55. **Noise perception, heart rate and blood pressure in relation to aircraft noise in the vicinity of the Frankfurt airport.**
Authors: Aydin, Y. Kaltenbach, M.
Kardiologisches Centrum, Pfingswaidstrasse 11, 60316 Frankfurt.
Source: Clinical Research in Cardiology. 96(6):347-58, 2007 Jun.
Abstract
UNLABELLED: The aim of this study was to evaluate subjective noise perception and objective parameters of circulation in the vicinity of the Frankfurt airport. Two areas were selected in which aircraft noise was the predominant Source: of noise (and was) created by planes induced by take off but not during landing. Data of residents living in the two areas were observed over a period of twelve weeks, one area being exposed to air traffic noise for three quarters of the given time, the other for one quarter of the time.

METHODS: Fifty three volunteers (age 50-52 +/- 15 y) monitored their blood pressure and heart rate over a period of three months by using an automatic device with digitized readings. They also protocolled their own subjective perception of noise and sleep quality. Thirty one probands were living West of the airport (West group) and were exposed to a nocturnal equivalent continuous air traffic noise level of L(eq(3)) = 50 dB(A) outside, during flight direction 25 to the West. Twenty two probands were living East of the airport (East group) and were exposed to L(eq(3)) = 50 dB (A) during flight direction 07 to the East. During the opposite flight directions air craft noise corresponded to L(eq(3)) = 40 dB(A) in both areas. Frankfurt airport operates direction 25 for about 75% of the time on average and direction 07 for 25% of the time.

RESULTS: The average blood pressure was significantly higher in the West group with higher noise exposure. Morning systolic blood pressure was 10 mmHg and diastolic pressure 8 mmHg higher in the West group. Throughout the observation period, the East group showed a parallel between daily changes in noise and subjective noise perception. In the West group such a parallel did not appear. This reaction was considered to be the consequence of the high noise exposure of the West group.

CONCLUSIONS: It is concluded that a population exposed to a nocturnal equivalent continuous air traffic noise level of L(eq(3)) = 50 dB(A) for three quarters of a given time has a higher average blood pressure compared to a population exposed to the same equal energy noise level for only one quarter of the time. Within the East group a parallel between noise exposure and noise perception was observed, while in the West group this parallel did not appear. The difference is considered to be the consequence of higher noise stress levels in the West group. The data are in accordance with recent epidemiological studies and indicate that a nocturnal aircraft noise of L(eq(3)) = 50 dB(A) can have negative effects on subjective noise perception and on objective parameters of circulation.
Year of Publication: 2007

56. **Noise exposure and children's blood pressure and heart rate: the RANCH project.**
Authors: van Kempen E. van Kamp I. Fischer P. Davies H. Houthuijs D. Stellato R. Clark C. Stansfeld S.
National Institute for Public Health and the Environment, Centre for Environmental Health Research, Netherlands. Elise.van.Kempen@rivm.nl
Source: Occupational & Environmental Medicine. 63(9):632-9, 2006 Sep.
Abstract
BACKGROUND: Conclusions that can be drawn from earlier studies on noise and children's blood pressure are limited due to inconsistent results, methodological problems, and the focus on school noise exposure.

OBJECTIVES: To investigate the effects of aircraft and road traffic noise exposure on children's blood pressure and heart rate.

METHODS: Participants were 1283 children (age 9-11 years) attending 62 primary schools around two European airports. Data were pooled and analysed using multilevel modelling. Adjustments were made for a range of socioeconomic and lifestyle factors.

RESULTS: After pooling the data, aircraft noise exposure at school was related to a statistically non-significant increase in blood pressure and heart rate. Aircraft noise exposure at home was related to a statistically significant increase in blood pressure. Aircraft noise exposure during the night at home was positively and significantly associated with blood pressure. The findings differed between the Dutch and British samples. Negative associations were found between road traffic noise exposure and blood pressure, which cannot be explained.

CONCLUSION: On the basis of this study and previous scientific literature, no unequivocal conclusions can be drawn about the relationship between community noise and children's blood pressure.
Year of Publication: 2006

57. **Exposure-effect relations between aircraft and road traffic noise exposure at school and reading comprehension: the RANCH project.**

Authors
Clark C. Martin R. van Kempen E. Alfred T. Head J. Davies HW. Haines MM. Lopez Barrio I. Matheson M. Stansfeld SA.
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Source: American Journal of Epidemiology. 163(1):27-37, 2006 Jan 1.
Local Messages
Etobicoke General Library holds back issues. Check catalogue for holdings on Oslernet.
Abstract
Transport noise is an increasingly prominent feature of the urban environment, making noise pollution an important environmental public health issue. This paper reports on the 2001-2003 RANCH project, the first cross-national epidemiologic study known to examine exposure-effect relations between aircraft and road traffic noise exposure and reading comprehension. Participants were 2,010 children aged 9-10 years from 89 schools around Amsterdam Schiphol, Madrid Barajas, and London Heathrow airports. Data from The Netherlands, Spain, and the United Kingdom were pooled and analyzed using multilevel modeling. Aircraft noise exposure at school was linearly associated with impaired reading comprehension; the association was maintained after adjustment for socioeconomic variables (beta = -0.008, p = 0.012), aircraft noise annoyance, and other cognitive abilities (episodic memory, working memory, and sustained attention). Aircraft noise exposure at home was highly correlated with aircraft noise exposure at school and demonstrated a similar linear association with impaired reading comprehension. Road traffic noise exposure at school was not associated with reading comprehension in either the absence or the presence of aircraft noise (beta = 0.003, p = 0.509; beta = 0.002, p = 0.540, respectively). Findings were consistent across the three countries, which varied with respect to a range of socioeconomic and environmental variables, thus offering robust evidence of a direct exposure-effect relation between aircraft noise and reading comprehension.
Year of Publication: 2006

58. **Incidence of cancer in the area around Amsterdam Airport Schiphol in 1988-2003: a population-based ecological study.**

Authors: Visser, Otto. van Wijnen, Joop H. van Leeuwen, Flora E.
Comprehensive Cancer Centre Amsterdam, PO Box 9236, 1006 AE Amsterdam, The Netherlands. o.visser@ikca.nl
Source: BMC Public Health. 5:127, 2005.
Abstract
BACKGROUND: Amsterdam Airport Schiphol is a major Source: of complaints about aircraft noise, safety risks and concerns about long term adverse health effects, including cancer. We investigated whether residents of the area around Schiphol are at higher risk of developing cancer than the general Dutch population.

METHODS: In a population-based study using the regional cancer registry, we estimated the cancer incidence during 1988-2003 in residents of the area surrounding Schiphol. We defined a study area based on aircraft noise contours and 4-digit postal code areas, since historical data on ambient air

pollution were not available and recent emission data did not differ from the background urban air quality.

RESULTS: In residents of the study area 13 207 cancer cases were diagnosed, which was close to the expected number, using national incidence rates as a reference (standardized incidence ratio [SIR] 1.02). We found a statistically significantly increased incidence of hematological malignancies (SIR 1.12, 95% confidence interval [CI]: 1.05, 1.19), mainly due to high rates for non-Hodgkin lymphoma (SIR 1.22, 95% CI: 1.12, 1.33) and acute lymphoblastic leukemia (SIR 1.34, 95% CI: 0.95, 1.83). The incidence of cancer of the respiratory system was statistically significantly decreased (SIR 0.94, 95% CI: 0.90, 0.99), due to the low rate in males (SIR 0.89). In the core zone of the study area, cancer incidence was slightly higher than in the remaining ring zone (rate ratio of the core zone compared to the ring zone 1.05, 95% CI 1.01, 1.10). This was caused by the higher incidence of cancer of the respiratory system, prostate and the female genital organs in the core zone in comparison to the ring zone.

CONCLUSION: The overall cancer incidence in the Schiphol area was similar to the national incidence. The moderately increased risk of hematological malignancies could not be explained by higher levels of ambient air pollution in the Schiphol area. This observation warrants further research, for example in a study with focus on substances in urban ambient air pollution, as similar findings were observed in Greater Amsterdam.
Year of Publication: 2005

59. **Hypertension and Exposure to Noise near Airports (HYENA): noise exposure assessment.**
Authors
Jarup L. Dudley ML. Babisch W. Houthuijs D. Swart W. Pershagen G. Bluhm G. Katsouyanni K. Velonakis M. Cadum E. Vigna-Taglianti F. HYENA Consortium.
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Source: Environmental Health Perspectives. 113(11):1473-8, 2005 Nov.
Abstract
An increasing number of people live near airports with considerable noise and air pollution. The Hypertension and Exposure to Noise near Airports (HYENA) project aims to assess the impact of airport-related noise exposure on blood pressure (BP) and cardiovascular disease using a cross-sectional study design. We selected 6,000 persons (45-70 years of age) who had lived at least 5 years near one of six major European airports. We used modeled aircraft noise contours, aiming to maximize exposure contrast. Automated BP instruments are used to reduce observer error. We designed a standardized questionnaire to collect data on annoyance, noise disturbance, and major confounders. Cortisol in saliva was collected in a subsample of the study population (n = 500) stratified by noise exposure level. To investigate short-term noise effects on BP and possible effects on nighttime BP dipping, we measured 24-hr BP and assessed continuous night noise in another subsample (n = 200). To ensure comparability between countries, we used common noise models to assess individual noise exposure, with a resolution of 1 dB(A). Modifiers of individual exposure, such as the orientation of living and bedroom toward roads, window-opening habits, and sound insulation, were assessed by the questionnaire. For four airports, we estimated exposure to air pollution to explore modifying effects of air pollution on cardiovascular disease. The project assesses exposure to traffic-related air pollutants, primarily using data from another project funded by the European Union (APMoSPHERE, Air Pollution Modelling for Support to Policy on Health and Environmental Risks in Europe).
Year of Publication: 2005

60. **Aircraft and road traffic noise and children's cognition and health: a cross-national study.**
Authors
Stansfeld SA. Berglund B. Clark C. Lopez-Barrio I. Fischer P. Ohrstrom E. Haines MM. Head J. Hygge S. van Kamp I. Berry BF. RANCH study team.
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Comment in: Lancet. 2005 Aug 27-Sep 2;366(9487):715-6; author reply 716; PMID: 16125586,
Abstract
BACKGROUND: Exposure to environmental stressors can impair children's health and their cognitive development. The effects of air pollution, lead, and chemicals have been studied, but there has been less emphasis on the effects of noise. Our aim, therefore, was to assess the effect of exposure to aircraft and road traffic noise on cognitive performance and health in children.

METHODS: We did a cross-national, cross-sectional study in which we assessed 2844 of 3207 children aged 9-10 years who were attending 89 schools of 77 approached in the Netherlands, 27 in Spain, and 30 in the UK located in local authority areas around three major airports. We selected children by extent of exposure to external aircraft and road traffic noise at school as predicted from noise contour maps, modelling, and on-site measurements, and matched schools within countries for socioeconomic . We measured cognitive and health outcomes with standardised tests and questionnaires administered in the classroom. We also used a questionnaire to obtain information from parents about socioeconomic , their education, and ethnic origin.

FINDINGS: We identified linear exposure-effect associations between exposure to chronic aircraft noise and impairment of reading comprehension (p=0.0097) and recognition memory (p=0.0141), and a non-linear association with annoyance (p0.0001) maintained after adjustment for mother's education, socioeconomic , longstanding illness, and extent of classroom insulation against noise. Exposure to road traffic noise was linearly associated with increases in episodic memory (conceptual recall: p=0.0066; information recall: p=0.0489), but also with annoyance (p=0.0047). Neither aircraft noise nor traffic noise affected sustained attention, self-reported health, or overall mental health.

INTERPRETATION: Our findings indicate that a chronic environmental stressor-aircraft noise-could impair cognitive development in children, specifically reading comprehension. Schools exposed to high levels of aircraft noise are not healthy educational environments.
Year of Publication: 2005

61. **Is noise bad for your health?.**
Authors: Rabinowitz, Peter M.
Yale Occupational and Environmental Medicine Program, Yale University School of Medicine, New Haven, CT 06880, USA. Peter.rabinowitz@yale.edu
Source: Lancet. 365(9475):1908-9, 2005 Jun 4-10.
Year of Publication: 2005

62. **Exposure to aircraft noise and risk of psychiatric disorders: the Elmas survey--aircraft noise and psychiatric disorders.**
Authors
Hardoy MC. Carta MG. Marci AR. Carbone F. Cadeddu M. Kovess V. Dell'Osso L. Carpiniello B.
Division of Psychiatry, Dept. of Public Health, University of Cagliari, Via Liguria 13, 09127 Cagliari, Italy.
Source: Social Psychiatry & Psychiatric Epidemiology. 40(1):24-6, 2005 Jan.
Abstract

BACKGROUND: Evidence that high levels of aircraft noise lead to psychiatric disorders in the community is contradictory. The aim of the present study was to investigate the frequency of mental disorders in a sample living in the immediate surroundings of an airport compared with those from a sample of residents from the same region who had not been exposed to the risk of aircraft noise.

METHODS: Exposed subjects were residents in Giliaquas in the vicinity of Elmas airport (Sardinia, Italy). The control sample was drawn from a database of a large community survey, after matching for sex, age and employment . All subjects were interviewed using a simplified version of the Composite International Diagnostic Interview.

RESULTS: Exposed subjects showed a higher frequency of Generalized Anxiety Disorder and Anxiety Disorder Not Otherwise Specified (NOS).

CONCLUSIONS: Previous studies generally suggested that high levels of environmental noise are associated with subsyndromal states (psychiatric symptoms) more than with specific syndromes. The present study shows an increased risk for long-lasting syndromal anxiety states (Generalized Anxiety Disorder and Anxiety Disorder NOS), thus supporting the hypothesis of a sustained central autonomic arousal due to chronic exposure to noise.
Year of Publication: 2005

63. **Children's cognition and aircraft noise exposure at home--the West London Schools Study.**
Authors: Matsui, T. Stansfeld, S. Haines, M. Head, J.
Department of Urban and Environmental Engineering, Graduate School of Engineering, Kyoto University, Sakyo, Kyoto 606-8501, Japan. t.matsui@health.env.kyoto-u.ac.jp
Source: Noise & Health. 7(25):49-58, 2004 Oct-Dec.
Abstract
The association of aircraft noise exposure with cognitive performance was examined by means of a cross-sectional field survey. Two hundred thirty six children attending 10 primary schools around Heathrow Airport in west London were tested on reading comprehension, immediate/delayed recall and sustained attention. In order to obtain the information about their background, a questionnaire was delivered to the parents and 163 answers were collected. Logistic regression models were used to assess performance on the cognitive tests in relation to aircraft noise exposure at home and possible individual and school level confounding factors. A significant dose-response relationship was found between aircraft noise exposure at home and performance on memory tests of immediate/delayed recall. However there was no strong association with the other cognitive outcomes. These results suggest that aircraft noise exposure at home may affect children's memory.
Year of Publication: 2004

64. **Protection goals for residents in the vicinity of civil airports. [Review] [42 refs]**
Authors: Griefahn, B. Scheuch, K. Jansen, G. Spreng, M.
Institute for Occupational Physiology at Dortmund University, Ardeyst. 67, D-44139 Dortmund, Fed. Rep. Germany. griefahn@ifado.de
Source: Noise & Health. 6(24):51-62, 2004 Jul-Sep.
Abstract
Based on extensive and detailed reviews the present paper suggests evaluation criteria for aircraft noise for the prediction of noise effects and for the protection of residents living in the vicinity of (newly constructed or extended) civil airports. The protection concept provides graded evaluation criteria: Critical loads indicate noise loads that shall be tolerated only exceptionally during a limited time. Protection Guides are central evaluation criteria for taking actions to reduce noise immission. Threshold

values inform about measurable physiological and psychological reactions due to noise exposures where long term adverse health effects are not expected. Evaluation criteria are provided for various protection goals, for hearing, communication and sleep, for the avoidance of annoyance and of suspected cardiovascular diseases. As protection of the residents is understood as a dynamic process, these criteria must be repeatedly tested and adapted to new scientific findings. [References: 42]
Year of Publication: 2004

65. **Unhealthy airports.**
Authors: Banatvala, Jangu.
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jangu@btopenworld.com
Source: Lancet. 364(9435):646-8, 2004 Aug 21-27.
Year of Publication: 2004

66. **Aircraft noise around a large airport and its impact on general health and medication use.**
Authors: Franssen, E A M. van Wiechen, C M A G. Nagelkerke, N J D. Lebret, E.
National Institute for Public Health and the Environment (RIVM), Centre for Environmental Health Research, Bilthoven, Netherlands.
Source: Occupational & Environmental Medicine. 61(5):405-13, 2004 May.
Other ID
Source: NLM. PMC1740783
Abstract
AIMS: To assess the prevalence of general health , use of sleep medication, and use of medication for cardiovascular diseases, and to study their relation to aircraft noise exposure.

METHODS: These health indicators were measured by a cross-sectional survey among 11 812 respondents living within a radius of 25 km around Schiphol airport (Amsterdam).

RESULTS: Adjusted odds ratios ranged from 1.02 to 2.34 per 10 dB(A) increase in L(den). The associations were statistically significant for all indicators, except for use of prescribed sleep medication or sedatives and frequent use of this medication. None of the health indicators were associated with aircraft noise exposure during the night, but use of non-prescribed sleep medication or sedatives was associated with aircraft noise exposure during the late evening (OR = 1.72). Vitality related health complaints such as tiredness and headache were associated with aircraft noise, whereas most other physical complaints were not. Odds ratios for the vitality related complaints ranged from 1.16 to 1.47 per 10 dB(A) increase in L(den). A small fraction of the prevalence of poor self rated health (0.13), medication for cardiovascular diseases or increased blood pressure (0.08), and sleep medication or sedatives (0.22) could be attributed to aircraft noise. Although the attributable fraction was highest in the governmentally noise regulated area, aircraft noise had more impact in the non-regulated area, due to the larger population.

CONCLUSIONS: Results suggest associations between community exposure to aircraft noise and the health indicators poor general health , use of sleep medication, and use of medication for cardiovascular diseases.
Year of Publication: 2004

67. **The effects of chronic aircraft noise exposure on children's cognition and health: 3 field studies.**
Authors: Matheson, M P. Stansfeld, S A. Haines, M M.

Department of Psychiatry, Queen Mary, University of London, Basic Medical Sciences Building, Mile End Road, London E1 4NS, England.
Source: Noise & Health. 5(19):31-40, 2003 Apr-Jun.
Abstract
This article provides a review of three of the most important field studies to have examined the non-auditory effects of chronic aircraft noise exposure on children's cognition and health. The design of each of the studies is outlined, relevant methodological issues are highlighted and the findings from the studies are reported. Effects are reported on annoyance and quality of life, motivation and helplessness, stress responses as indexed by neuroendocrine tests and blood pressure measurements. In terms of cognitive performance, effects are reported on reading, attention and long-term and working memory. [References: 20]
Year of Publication: 2003

68. **Environmental factors associated with asthma. [Review] [59 refs]**
Authors: Walker, Bailus Jr. Stokes, Lynette D. Warren, Rueben.
Howard University Medical Center, Environmental Health Administration, District of Columbia Department of Health, Washington, USA.
Source: Journal of the National Medical Association. 95(2):152-66, 2003 Feb.
Abstract
Asthma, a disease of attacks and remission, continues to account for substantial morbidity and direct economic costs. Numerous studies--epidemiologic, toxicologic and clinical--present evidence for a broad spectrum of environmental risk factors associated with asthma. This review summarizes current thinking on a subset of these factors. Knowledge of potential environmental determinants of asthma is important to both the patient and healthcare professional in the application of multiple modalities of medical and environmental intervention for management of the development, and exacerbation of this chronic inflammatory disorder of the airways. [References: 59]
Year of Publication: 2003

69. **A prospective study of some effects of aircraft noise on cognitive performance in schoolchildren.**
Authors: Hygge, Staffan. Evans, Gary W. Bullinger, Monika.
Centre for Built Environment, University of Gavle, Sweden. staffan.hygge@hig.se
Source: Psychological Science. 13(5):469-74, 2002 Sep.
Abstract
Before the opening of the new Munich International Airport and the termination of the old airport, children near both sites were recruited into aircraft-noise groups (aircraft noise at present or pending) and control groups with no aircraft noise (closely matched for socioeconomic). A total of 326 children (mean age = 10.4 years) took part in three data-collection waves, one before and two after the switch-over of the airports. After the switch, long-term memory and reading were impaired in the noise group at the new airport. and improved in the formerly noise-exposed group at the old airport. Short-term memory also improved in the latter group after the old airport was closed. At the new airport, speech perception was impaired in the newly noise-exposed group. Mediational analyses suggest that poorer reading was not mediated by speech perception, and that impaired recall was in part mediated by reading.
Year of Publication: 2002

70. **Multilevel modelling of aircraft noise on performance tests in schools around Heathrow Airport**
Authors: Haines, M M. Stansfeld, S A. Head, J. Job, R F S.
Department of Psychiatry, St Bartholomew's and The Royal London School of Medicine and Dentistry, Queen Mary College, University of London, UK. M.Haines@qmw.ac.uk

Source: Journal of Epidemiology & Community Health. 56(2):139-44, 2002 Feb.
Abstract
STUDY OBJECTIVE: To examine the effects of chronic exposure to aircraft noise on children's school performance taking into account social class and school characteristics.

DESIGN: This is a cross sectional study using the National Standardised Scores (SATs) in mathematics, science, and English (11 000 scores from children aged 11 years). The analyses used multilevel modelling to determine the effects of chronic aircraft noise exposure on childrens' school performance adjusting for demographic, socioeconomic and school factors in 123 primary schools around Heathrow Airport. Schools were assigned aircraft noise exposure level from the 1994 Civil Aviation Authority aircraft noise contour maps.
PARTICIPANTS: The sample were approximately 11 000 primary school children in year 6 (approximately 11 years old) from 123 schools in the three boroughs surrounding Heathrow Airport.

MAIN RESULTS: Chronic exposure to aircraft noise was significantly related to poorer reading and mathematics performance. After adjustment for the average socioeconomic of the school intake (measured by percentage of pupils eligible for free school meals) these associations were no longer statistically significant.

CONCLUSIONS: Chronic exposure to aircraft noise is associated with school performance in reading and mathematics in a dose-response function but this association is confounded by socioeconomic factors.
Year of Publication: 2002

71. **A follow-up study of effects of chronic aircraft noise exposure on child stress responses and cognition.**
Authors: Haines, M M. Stansfeld, S A. Job, R F. Berglund, B. Head, J.
Department of Psychiatry, St Bartholomew's and The Royal London School of Medicine and Dentistry, Queen Mary and Westfield College, London, UK. M.M.Haines@qmw.ac.uk
Source: International Journal of Epidemiology. 30(4):839-45, 2001 Aug.
Abstract
BACKGROUND: Children are a high-risk group vulnerable to the effects of chronic aircraft noise exposure. This study examines the effects of aircraft noise exposure on children's health and cognition around London Heathrow airport and tests sustained attention as an underlying mechanism of effects of noise on reading and examines the way children adapt to continued exposure to aircraft noise.

METHODS: In this repeated measures epidemiological field study, the cognitive performance and health of 275 children aged 8-11 years attending four schools in high aircraft noise areas (16-h outdoor Leq 66 dBA) was compared with children attending four matched control schools exposed to lower levels of aircraft noise (16-h outdoor Leq 57 dBA). The children first examined at baseline were examined again after a period of one year at follow-up. Health questionnaires and cognitive tests were group administered to the children in the schools.

RESULTS AND CONCLUSIONS: At follow-up chronic aircraft noise exposure was associated with higher levels of annoyance and perceived stress, poorer reading comprehension and sustained attention, measured by standardized scales after adjustment for age, social deprivation and main language spoken. These results do not support the sustained attention hypothesis previously used to account for the effects of noise on cognition in children. The reading and annoyance effects do not habituate over a one-year period and do not provide strong evidence of adaptation.
Year of Publication: 2001

72. **Chronic aircraft noise exposure, stress responses, mental health and cognitive performance in school children.**

Authors: Haines, M M. Stansfeld, S A. Job, R F. Berglund, B. Head, J.
Department of Psychiatry, St Bartholomew's and The Royal London School of Medicine and Dentistry, Queen Mary and Westfield College.

Source: Psychological Medicine. 31(2):265-77, 2001 Feb.

Abstract

BACKGROUND: Previous research suggests that children are a high risk group vulnerable to the effects of chronic noise exposure. However, questions remain about the nature of the noise effects and the underlying causal mechanisms. This study addresses the effects of aircraft noise exposure on children around London Heathrow airport, in terms of stress responses, mental health and cognitive performance. The research also focuses on the underlying causal mechanisms contributing to the cognitive effects and potential confounding factors.

METHODS: The cognitive performance and health of 340 children aged 8-11 years attending four schools in high aircraft noise areas (16 h outdoor Leq 66 dBA) was compared with children attending four matched control schools exposed to lower levels of aircraft noise (16 h outdoor Leq 57 dBA). Mental health and cognitive tests were group administered to the children in the schools. Salivary cortisol was measured in a subsample of children.

RESULTS: Chronic aircraft noise exposure was associated with higher levels of noise annoyance and poorer reading comprehension measured by standardized scales with adjustments for age, deprivation and main language spoken. Chronic aircraft noise was not associated with mental health problems and raised cortisol secretion. The association between aircraft noise exposure and reading comprehension could not be accounted for by the mediating role of annoyance, confounding by social class, deprivation, main language or acute noise exposure.

CONCLUSIONS: These results suggest that chronic aircraft noise exposure is associated with impaired reading comprehension and high levels of noise annoyance but not mental health problems in children.

Year of Publication: 2001

73. **Real-time and integrated measurement of potential human exposure to particle-bound polycyclic aromatic hydrocarbons (PAHs) from aircraft exhaust.**

Authors: Childers, J W. Witherspoon, C L. Smith, L B. Pleil, J D.
ManTech Environmental Technology, Inc., Research Triangle Park, North Carolina 27711-2055, USA.

Comment in: Environ Health Perspect. 2000 Sep;108(9):A417; PMID: 11185387

Abstract

We used real-time monitors and low-volume air samplers to measure the potential human exposure to airborne polycyclic aromatic hydrocarbon (PAH) concentrations during various flight-related and ground-support activities of C-130H aircraft at an Air National Guard base. We used three types of photoelectric aerosol sensors (PASs) to measure real-time concentrations of particle-bound PAHs in a break room, downwind from a C-130H aircraft during a four-engine run-up test, in a maintenance hangar, in a C-130H aircraft cargo bay during cargo-drop training, downwind from aerospace ground equipment (AGE), and in a C-130H aircraft cargo bay during engine running on/off (ERO) loading and backup exercises. Two low-volume air samplers were collocated with the real-time monitors for all monitoring events except those in the break room and during in-flight activities. Total PAH concentrations in the integrated-air samples followed a general trend: downwind from two AGE units ERO-loading exercise four-engine run-up test maintenance hangar during taxi and takeoff background

measurements in maintenance hangar. Each PAH profile was dominated by naphthalene, the alkyl-substituted naphthalenes, and other PAHs expected to be in the vapor phase. We also found particle-bound PAHs, such as fluoranthene, pyrene, and benzo[a]pyrene in some of the sample extracts. During flight-related exercises, total PAH concentrations in the integrated-air samples were 10-25 times higher than those commonly found in ambient air. Real-time monitor mean responses generally followed the integrated-air sample trends. These monitors provided a semiquantitative temporal profile of ambient PAH concentrations and showed that PAH concentrations can fluctuate rapidly from a baseline level 20 to 4,000 ng/m(3) during flight-related activities. Small handheld models of the PAS monitors exhibited potential for assessing incidental personal exposure to particle-bound PAHs in engine exhaust and for serving as a real-time dosimeter to indicate when respiratory protection is advisable.
Year of Publication: 2000

74. **Examination of various biomarkers measuring genotoxic endpoints from Barcelona airport personnel.**
Authors: Pitarque, M. Creus, A. Marcos, R. Hughes, J A. Anderson, D.
Grup de Mutagenesi, Departament de Genetica i de Microbiologia, Edifici Cn, Universitat Autonoma de Barcelona, 08193 Bellaterra, Spain.
Source: Mutation Research. 440(2):195-204, 1999 Apr 6.
Abstract
Three different biomarkers: sister-chromatid exchanges (SCE), micronuclei (MN), and the Comet assay, were used to evaluate different kinds of genetic damage in peripheral blood lymphocytes from 34 male workers at Barcelona airport, exposed to low levels of hydrocarbons and jet fuel derivatives. The control group consisted of 11 unexposed men. We also investigated the ras p21 protein levels in plasma, in order to evaluate whether the ras gene could serve as a suitable potential marker of carcinogenic pollution in occupationally exposed cohorts. SCE and MN analyses failed to detect any statistically significant increase in the airport workers when compared with the controls, and in fact, the frequency of binucleated cells with MN in the exposed group was significantly lower than that obtained in the control. However, slight but significant differences in the mean comet length and genetic damage index were observed between the exposed and control groups when using the Comet assay. There were no statistically significant differences between both groups in p21 plasma levels. Smoking was shown to affect significantly both SCE and high frequency cells (HFC) in the exposed group. Copyright 1999 Elsevier Science B.V.
Year of Publication: 1999

75. **Plane pollution.**
Authors: Holzman, D.
Comment in: Environ Health Perspect. 1998 Nov;106(11):A527-8; PMID: 9882176
Source:
Environmental Health Perspectives. 105(12):1300-5, 1997 Dec.
Year of Publication: 1997

Airport Noise Management Proposals for Toronto Island Airport

1. No engine run-ups before 8 am, or after 8 pm, except for emergency purposes.

2. No island airport commercial flights after 10 pm, as late night noise is the worst noise. Some airport neighbours are requesting that commercial flights end at 8 pm, if possible.

3. Cancel city permits for overnight construction at the Island Airport, as overnight construction wakes the neighborhood. It's unhealthy to live with loud noise all day and all night. The airport should not be allowed to make noise all day and all night long.

4. The City should consider stopping the use of Adjusted DBA Decibel measurements, and instead use Complete DBC Decibels for monitoring airport noise. DBC Decibels are a more accurate measure of noise, because DBA decibels don't measure bass noises.

Community Noise Standards for Toronto's Harbourfront Community

The goal is to keep all regular noise below 65 DBA. It has been determined that any noise above 70 DBA = 80 DBC Decibels, is a disturbing noise. When noise reaches 85 DBC Decibels, it is a serious noise problem for the neighborhood, especially when the noise is sustained, ie. with 200 flights in and out of an airport all day, every day.

Noise Comparisons With Both DBA & DBC Decibel Measurements

quiet nights	40 dba	=	45 dbc
quiet room indoors	45 dba	=	50 dbc
quiet balcony outdoors	50 dba	=	60 dbc
passing cars on a busy street	60 dba	=	70 dbc
loud television, vacuum cleaner	65 dba	=	75 dbc
loud stereo, power lawnmower	70 dba	=	80 dbc
louder bass sounds, car alarms	75 dba	=	88 dbc
loud motorcycles, garbage trucks	80 dba	=	95 dbc
live concert sound systems	85 dba	=	100 dbc
fire engines, sirens	90 dba	=	110 dbc
lightning	100 dba	=	120 dbc
airport noise, airplane flying overhead	65 dba	=	75 dbc
airplane takeoff, more bass noise	70 dba	=	82 dbc
airplane taxiing	73 dba	=	85 dbc
airplane landing (braking)	75 dba	=	88 dbc
engine maintenance run-up	77 dba	=	90 dbc

Noise Measurement Note: Adjusted DBA Decibel readings are 15-20% lower than Complete DBC Decibel readings, for the same sound, because DBA adjusted decibels do not measure bass noise. Airport ground noise is mostly bass noise. The only valid way to measure an airport's constantly roaring bass noise is with DBC Decibels.

It's also important to note that airplane industry noise readings are taken from a greater distance than the other noises on the list. With noise measurements taken closer to the plane, ie. on the runway, airplane noise readings are much higher than the TPA reports.

We recommend these Airport Noise Management Proposals, and hope Toronto City Council will adopt these Community Noise Standards for the Harbourfront.

www.harbourfrontcommunity.info

Subject: FW: Airport Health Study - Community Health Concerns
Attachments: ! Airport Health Concerns -Harbourfront Community Comments , Oct10-2013.doc; ! Airport Noise Management Proposals.doc

>>> 10/10/2013 11:33 AM >>>
For: Toronto Health - Study of the Island Airport
Re: Community Health Concerns

I'm enclosing personal comments concerning health of people living near the island airport, for inclusion in the airport health study.

Thank you.

Max Moore, Harbourfront Community Association
www.harbourfrontcommunity.info

Toronto Island Airport - Harbourfront Community Health Concerns

From: Max Moore, Harbourfront Community Association

As a harbourfront resident who lives in view of the island airport, I have complained about airport noise hundreds of times, but the airport dismisses our noise complaints. Most of our complaints are about ground operation noise, which is not regulated by the Tripartite Agreement, and not monitored by the city.

Airplane noise is incredibly loud. The Port Authority dismisses our noise complaints by measuring noise with adjusted DBA decibels, which discount noise readings by 20%. As an audio engineer, I measure airport noise with complete DBC Decibels, which are a more valid measure of noise. This disagreement over how to measure noise is at the heart of the problem. If we can't get an accurate measure of noise, then the airport doesn't have to admit it is making excessive noise. According to the way the Port Authority measures noise, jets are quieter than cars, which is total nonsense. In this way, by using nonsense noise readings, they can continue to ignore noise complaints.

In view of the difficulty of having our problems acknowledged by the airport, or the city, I have documented some of the problems the neighborhood is experiencing, and posted videos on the website, ***www.harbourfrontcommunity.info***. Also on this website is a video I made of airport tunnel construction noise, registering at 85 DBC Decibels, at 4 am. Overnight construction noise is a regular problem, which disturbs our sleep a lot.

From our perspective, island airport noise is excessive, many times a day, but not all the time. Noise from the airport depends on wind direction and cloud cover. When the wind is blowing from the south, airport noise is as loud as thunder, and this noise invades our homes regularly. It's so loud in our homes, we can't hear other people talking, we can't hear phone conversations, and we can't hear the tv in the evening. This causes a state of constant tension, but the most disruptive noise is before 8 am and after 8 pm.

Noise from the airport invades our homes from 6 am until midnight every night. Even after midnight, we are awakened regularly by overnight airport construction and medivac helicopters. The end result is that we suffer from interrupted sleep 3 or 4 nights a week. I have experienced some really bad periods when | was able to get only 4 or 5 hours sleep a night for weeks at a time, due to overnight airport noise.

The end result of airport induced sleep deprivation is a dramatic decline in health, with noticeable symptoms like constant headaches, a pounding heartbeat, and a decline in the immune system's ability to manage even minor problems like colds and flu.

For me, sleepless nights seem to be combining with air pollution to create constant sinus problems, never-ending headaches, and difficulty breathing deeply. My doctor has diagnosed my sinus problems as rhinitis, apparently a common problem for people living near airports. It's like having a mild cold that never goes away. But the biggest problem is the headaches, as they interfere with my ability to function socially and at work.

The bottom line is that living beside an airport makes me feel like I'm aging more quickly than normal. I'm not as healthy as I was, and I'm losing control of my immune system. I blame the airport and its constant noise and air pollution for this health decline.

, Toronto Island Resident

- air quality - in the past few years, I have noticed a black oily film on our windows and the siding of our house that I have never seen before. In the past, there has been a bit of black grit that you might expect, as part of living in an urban centre, but this is an oily film that seems to me has to be from plane exhaust. If that's sticking to our house, we must be also breathing it in.
- noise - my sleep is often interrupted, particularly late in the day and early in the morning, by the planes. But also, both outside and inside my home, I am regularly aware of the landings/takeoffs/taxiing of the 200-plus planes each day, not to mention overflights which actually do take place over the houses on the east end of the island. There is no respite from the constant drone which frequently peaks into roaring noise.

From:

Re: Health concerns related to the expansion of the Billy Bishop Airport:

I want to register my health concerns of poor air quality due to the ever increasing jet fuel traffic from Billy Bishop Airport.

I have lived on Toronto Island for 20 years and run a daycare on the Island for 24 years. I have mild asthma and I have noticed it being harder to breath. Lately friends and family are asking me what is wrong with my breathing as well. I have also noticed that the outside walls of (my home and the school), windows, doors, toys, and equipment are dirtier with a greasy grime that wasn't there 10 years ago. This oily pollution is in the air and it will only increase with Airport expansion.

Tell them to just simply do the right thing and stop it now. Not just for the current residents but for all the young children who will inherit the results of our actions. Years ago when the Jets started I actually naively thought that there wouldn't be a difference but there is and I am not happy about it.

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We recommend these Airport Noise Management Proposals, and hope Toronto City Council will adopt these Community Noise Standards for the Harbourfront.

www.harbourfrontcommunity.info

Sent: Wednesday, October 16, 2013 10:00 AM
To: Papageorgiou, Agni
Cc: Brian Iler
Subject: Measuring Airport Noise

For: Danny da Silva (please forward)

You may find this interesting. It's information from the Standards Council of Canada on Measuring Airport Noise.
It's probably too late for this kind of detail to be included in your report, but shows what still needs to be done.
It gives the impression that this is still a developing science, and includes some very good references.

Max Moore, Harbourfront Community Association

From: Denis Loranger
Sent: Wednesday, October 16, 2013 9:26 AM

Subject: Airport noise

Hello,

Thank you for contacting the Standards Council of Canada (SCC).

The Standards Council carries out a variety of functions intended to ensure the effective and coordinated operation of standardization in Canada. One of these functions is to provide accreditation programs for laboratories, inspection bodies, product and personnel certifiers, and management systems certification bodies. Our accredited clients will provide testing and certification services. However, SCC does not have any regulatory authority in its mandate therefore mandatory standards/specifications and possible conformity assessment requirements needs to be reviewed with the proper authority.

We contacted the Canadian Chair of ISO/TC 43 and he doesn't beleave anything can be done from the international level. According to him changes can only be made by going to Transport Canada. There is an international standard that is typically used for small airports (ISO 20906) but the Toronto airport doesn't follow it. I have included the following information and hope it is useful to you.

ISO 20906:2009 https://www.iso.org/obp/ui/#iso:std:iso:20906:ed-1:v1:en
Title/Titre: Acoustics -- Unattended monitoring of aircraft sound in the vicinity of airports

ISO/TC 43 - Acoustics
http://www.iso.org/iso/home/standards_development/list_of_iso_technical_committees/iso_technical_committee_participation.htm?commid=48458

NRC – Acoustical standards
http://www.nrc-cnrc.gc.ca/eng/solutions/advisory/calibration/acoustical_standards.html

Noise - Basic Information
http://www.ccohs.ca/oshanswers/phys_agents/noise_basic.html

Best regards,

Denis Loranger
Information Officer / Agent d'information
Standards Council of Canada / Conseil canadien des normes
200- 270 rue Albert Street, Ottawa, Ontario K1P 6N7
Tel. +1 613 238 3222 (463)
dloranger@scc.ca

Standards **Experts**. Accreditation **Solutions**. www.scc.ca

- - -

Sent: Friday, October 11, 2013 1:17 PM
To: Papageorgiou, Agni
Subject: Airport Noise Measurements - DBA or DBA or Both
Attachments: Airport Noise Measurements - DBA or DBC Decibels.doc; Airport Noise Measurement, Letter to MOT, Sept 20.2013.doc

For: Danny da Silva (please forward)

Re: DBA or DBC Noise Measurements – background material

I'm enclosing some background information on the DBA-DBC discussion.

Basically, The Canadian Standards Association has found problems with DBA, and are now using both DBA and DBC in their factory noise studies.

The City (MLS) has also given up on measuring noise because DBA noise measurements make no sense to them. (ie. no correlation between the small numbers and the complaints).

The Canadian Acoustical Association publishes the Canadian Acoustics Journal, edited by Frank Russo (Ryerson), who says (and I quote),
"I agree with you regarding the inadequacy of dBA measurements for airport noise. Please feel free to forward my opinion on dBA to the city."
There's also a letter to Lisa Raitt, Minister of Transport about the shortcomings of DBA as a noise measure.

I know this is a larger topic than can be addressed in the current study, but if you do your noise reports in both DBA and DBA (like the CSA is now doing), you'll be prepared for everything.

Thanks for considering this extra consideration.

You might also be interested in a video on our community website which shows 2 videos, on on the airport and the community. The second video shows airport construction noise at 4 am. I measured the noise in that video at 85 DBC at 4 in the morning. That was a regular occurrence until I posted the video, then they started working more quietly.

Max Moore, Harbourfront Community Association
www.harbourfrontcommunity.info

Harbourfront
Community Association
Station A, Box 144
Toronto, M5W 1A2
Sept. 20, 2013

For: Lisa Raitt, Minister of Transport
Re: Airport Noise Measurement

Thank you for your detailed and informative letter of Sept. 4, in reply to my correspondence of June 5, regarding noise measurement at Toronto Island Airport.

As someone who used to work in Transport Canada, I understand the information you provided, but would like to focus on one point - the use of DBA versus DBC Decibel measurements as an aviation "industry standard".

You are correct in saying that "A-weighting is the most common measure of sound pressure levels for sounds coming from transportation and other sources, and it has been used for a long time."

This is unfortunate, as the DBA scale is not a valid measure of noise as people hear it. The DBC noise measurement is a more valid way to measure noise as people hear it.

As you explained, the DBA Decibel has a history, and is used worldwide by airports. But this is because it serves the airports' interests, as a PR tool, to mislead decision makers and suppress community noise complaints.

Let me explain. In my latest career, I am an audio engineer, managing sound systems for live concerts. When a policeman asks me to turn down the volume at a concert because there are noise complaints, I show the policeman the DBA Decibel reading.

As an audio professional, I know that the DBA reading is 20% less than the DBC Decibel reading, simply because the DBA reading does not measure the full bass sound.

By showing a noise meter reading at 80 DBA decibels, it looks like a concert is not violating the noise by-law. By contrast, if I showed the complete noise reading at 100 DBC decibels, the cop would have enough information to cancel the concert.

Is this dishonest? Yes. And it is a practise used by soundmen all around the world. Policemen don't know DBAs from DBCs, and therefore soundmen can fool the world. In essence, because DBA readings are lower than DBC Decibels for the same noise, DBA readings are biased in favour of the noise maker.

For these reasons, the City of Toronto has stopped using DBA decibel measurements to settle noise complaints, and the Canadian Standards Association is using both DBA and DBC measurements in its noise studies to get a better understanding of the problem.

..... 2

Which brings us to Transport Canada, and all transportation agencies around the world, especially ICAO. These agencies hire audio engineering consultants to give them a noise measure which serves the purposes of the airline industry, but which does not give a true noise reading which can help people who question airport noise levels.

In other words, the aviation industry employs highly paid audio engineers to provide biased reports which serve the airline industry purposes, but which are not honest or fair.

It's like we the people are trapped in an Emperor's Clothes kind of situation. Transport Canada's highly paid consultants are telling you that there is no noise problem, based on DBA noise readings, while we the people are suffering from excessive noise.

It's not as much a noise problem as an honesty problem. Your audio consultants are being dishonest. The problem occurs when you believe these dishonest consultants.

We the people wish you would stop using the dishonest DBA Decibel noise measurement and start using the more honest DBC Decibel measurement.

Until this change is made, and a more honest reporting of airport noise is instituted, we the people will view the federal government as a fool, like an Emperor with no clothes. You no doubt remember the children's story about the Emperor who listened to his advisors and ignored reality, and wound up looking like a fool.

That being said, I know that you have inherited this situation of dishonest noise reporting, and it is not your fault. There's a lot of inertia behind the false reporting of noise at airports, and the aviation industry is to blame for this dishonesty in noise reporting. They adopted this industry standard because they could get away with it, but that doesn't make it right, or honest, or fair to taxpayers.

Perhaps it is too much to expect the Canadian Government to challenge the ICAO "industry standard", but at the same time, please do not expect us to believe their lies. To continue using ICAO noise measurements as a way of measuring noise around Toronto Island airport is both dishonest and misleading, and insulting to us. We don't appreciate being misinformed, and we don't like to see our public officials being misled.

Thank you for listening to our complaint about this dishonest aviation industry noise reporting practise. And as one who used to work in Transport Canada, (my job was writing ministerial briefing book notes for Cabinet meetings), I must say I appreciate the complexity and importance of the things you are managing. Best of luck with your new responsibilities

Max Moore, Harbourfront Community Association
www.harbourfrontcommunity.info

For: Airport Community Committee - Noise Sub-Committee
From: Max Moore, Harbourfront Community Association, Feb 2, 2012

Subject: Airport Noise Measurements - DBA Decibels or DBC Decibels

Airport Noise is measured in decibels, but there are two types of decibel measurements.

Toronto Island Airport is using an invalid noise measurement, with DBA Decibels.

Adjusted Decibel readings, called DBA Decibels, measure only 80% of the noise, while Complete Decibel readings, called DBC Decibels, measure the full sound spectrum.

City Hall is hearing reports of **65 DBAs** of airport noise, while Island Airport neighbours are hearing **80 DBCs** of airport noise. It's the same noise, with different measurements.

DBA decibels are discounted by approx 20% because DBA decibels don't measure bass sounds. DBC measurements, which include bass noise, are a more accurate measure of both rock concerts and airport noise because there's so much bass in these noises.

Noise meters can display noise measurements as both DBAs and DBCs, simply by pressing a button. When you change from DBC to a DBA display, the decibel reading is lowered by 15-20%, simply by removing bass readings. All this does is to change the measurement, not the sound. It's like advertising a sale price and still charging full price.

If you're managing sound for a concert in a public park, for example, a policeman might ask you to turn down the volume because people are complaining. Some soundmen would show the policeman the lower noise reading of 80 DBA. It's dishonest, but if you show the more accurate 100 DBC decibel display, the cop might stop the concert.

Similarly, airports report noise measurements in DBA decibels to minimize their noise reports, for public relations purposes. Lower numbers help convince city hall that the airport is operating within legal noise limits, when, in truth, it is breaking the law.

This is why Harbourfront residents are requesting that Airport Noise Measurements be reported in Complete DBC Decibels. For the airport to continue using adjusted and averaged DBA noise measurements, discounted by 20%, is simply lying with statistics.

Adjusting and discounting airport noise measurements by 20% is dishonest and wrong. Surely the Island Airport can do better for its waterfront neighbours than trying to baffle them with bullshit.

Harbourfront residents deserve more honesty from a federal agency like the Port Authority. Measuring airport noise with DBC Decibels would be a good way to start.

To: "sgower@toronto.ca" <sgower@toronto.ca>
Date: Saturday, October 12, 2013 10:51 AM

October 12 2013

Dear S Gower,

I am sending this message to support Greenpeace and other organizations in opposing the development of jet flights from the island airport. I am very concened about the noise and carbon pollution in our city at that waterfront area

Sincerely,

To: <sgower@toronto.ca>
Date: Wednesday, October 16, 2013 4:11 PM
Subject: Health concerns with jets in TO

Hi Stephanie,

I learned from twitter that if we have health concerns on the expansion of the Billy Bishop ariport, that we could write to you.

I am very concerned about increasing the air pollution that this expansion will lead to. I suffered from asthma as an infant and have always had weak lungs as a result. I, and others with lung issues like me, have to be concerned about air pollution. On smoggy days it can be difficult to breath, and the increased air pollution will no doubt make this even more of a challenge.

From what I've read there is only the monetary gain for expanding the airport. The environmental and social benefits seem to be nonexistent and instead, replaced with costs to each. I am not ok with the airport expansion.

Thank you for listening.

To: "sgower@toronto.ca" <sgower@toronto.ca>, "dmckeown@toronto.ca" <dmckeown...
Date: Saturday, October 05, 2013 7:57 PM
Subject: Letter written re: Airport expansion

August 3, 2013

To: City Council- Mayor and City Councillors
cc. Water Secretariat and Dr. David McKeown, MOH, Toronto

We are writing you to express grave concerns regarding the proposal to expand the Billy Bishop Airport to jets. We are community health physicians and are extremely alarmed by the potential health harm of jets which will particularly impact the community that lives in such close proximity to the airport. This includes a large number of children and families including pregnant women. There is also a daycare, a community centre, outdoor recreational facilities and a public school in this vicinity.

We will outline some of our main health concerns. There are other concerns that are involved (such as increased risk from increased traffic) but we will limit ourselves to health concerns about jet fuel and noise. We have reviewed and referenced the Health Impact Assessment done on the Santa Monica Airport in 2010 researched and written by physicians. The situation in Santa Monica is quite analogous to the situation in Toronto with a community living in close proximity to the airport. This report reviews the impact of exposure to jet fuel exhaust byproducts and the increased exposure to noise pollution.

Jet fuel exhaust byproducts are numerous and include black carbon, particles- high, medium and ultra-fine and polycyclic aromatic hydrocarbons. These byproducts are particularly of concern during airplane departures and to a lesser extent, landings.

Many studies have linked black carbon with respiratory disease. It has been shown that lung function is reduced with exposure to black carbon and associated with higher rates of asthma and bronchitis in school-aged children particularly with more prolonged exposure ie more than one year. There are also investigations that associate black carbon with direct effects on DNA which could be a link to increased cancer risks.

Jet fuel also contains particulate matter of varying sizes including ultrafine particulate. It has been shown that ultrafine particulate (UFP) results in even greater lung inflammation than exposure to larger

particulates. Also, once in the lung it appears that by some yet unknown mechanism, it sets up other inflammation in the body and there is evidence that suggests that this inflammation may predispose to atherosclerosis (hardening of the arteries).

Polycyclic aromatic hydrocarbons are yet another group of chemicals found in jet fuel exhaust. They have been shown to be both toxic to genes and carcinogenic (cancer-causing). This raises obvious concerns especially for children and pregnant women. A study that is referenced in the Santa Monica study showed that "infants who have been exposed prenatally to the highest PAH levels scored significantly lower on the mental developmental index at 3 years of age than did those with lower levels of PAH exposure".

Although the CEO of Porter, Robert Deluce promises "whisper jets" we cannot of course rely on this in any way. This would be like physicians obtaining their information about medication from drug companies. One would assume that the level of noise is going to increase significantly.
Noise itself is a harmful pollutant especially as it impacts children. It has also been shown to increase blood pressure, decrease memory and reduce attention span. One study showed that exposure to even 50 decibels of noise in the daytime is associated with learning difficulties in children. This relates to noise not just at school but within their own homes.

A large scale study is currently being undertaken on 6000 subjects to delineate the affects of noise pollution on blood pressure and cardiovascular disease. This suggests that there are very real concerns and that we have much yet to learn about noise as a pollutant. We would not like the population at the airport to be the guinea pigs.

Finally, there is always the worst case scenario of accidents or disasters. The close proximity of the community at the waterfront to the airport puts this population at serious risk of a bad outcome in this situation. Having just experienced the horrific harm to the Lac-Megantic community, it doesn't take much to imagine a catastrophic situation when people are so close to such technology.

We have outlined some of our grave concerns. We understand that the Toronto Public Health is doing a comprehensive health care assessment and have faith in their good abilities.

We would like however to express our personal opinion regarding the proposal to increase traffic and introduce jets to the Billy Bishop Airport based on these real health concerns. Our personal assessment is to stop this proposal in its tracks.

It is unhealthy and dangerous.

Sincerely,

Reference: Santa Monica Health Impact Assessment (HIA) February 2010

Subject: FW: My concerns about the airport expansion
Attachments: Background Information for HIA Workshop.pdf

>>> 10/05/13 6:46 PM >>>

Dear Dr. Gower and Dr. McKeown,

Thank you very much for the invitation on October 9 and the opportunity to participate in discussion about the health risk assessment of the proposal of expansion of the Island airport.
I unfortunately cannot attend due to a prior committment which can't be changed.
I am writing with a few thoughts and considerations that haven arisen particularly after I attended one of the public consulations as well as the Town Hall meeting.
As you are aware, and I have written a letter in August about our concerns about the airport expansion mainly focusing on jet fuel by products and noise.

What really becomes clear from listening and considering the situation at Bathurst Quay in particular, is the enormous burden on this population's health at present. There is the Gardiner nearby, an airport in extremely close proximity with very regular (Porter) flights every few minutes as well as helicopter and
smaller planes.
And all this within metres of a high housing density, a school, an indoor and outdoor recreational facilities and daycare. A teacher noted that school windows already need to be closed due to
the smell of fuel. There is already concern about children crossing with the high volume of traffic and congestion that already exists.

People also mentined the procedure that is referred to as "engine runup" with the average time of
10-15 minutes which happens at all hours of the day morning noon evening and night and is much louder than the takeoff. This can be very disruptive of sleep and is not acceptable.

I would say that the health impact assessment should indeed take into account the present burden on health which we know is cumulative and the health risks.

Another point made was the concern about disposing of chemical waste from the airport. Are there procedures in place to ensure that no waste is put into the lake water? I hope this is also looked into as it is a serious concern regarding our drinking water source.

Finally I
didn't really hear anything about disaster scenarios. This isn't just
about emergency landings but also if there is a chemical fire or such. There will be more vehicles for example transporting fuel and other chemicals.

Again to reiterate, the burden on the population's health at the Bathurst Quay is already too high and any further burden cannot be tolerated.

Thanks again for the opportunity to share my concerns.

Sincerely,

To: <sgower@toronto.ca>
Date: Friday, October 11, 2013 6:43 PM
Subject: Submission to HIA Island Airport Jet Proposal

With Toronto's core already impacted by gridlock, increase of vehicular & air traffic resulting from any expansion to Toronto's airport island (to include jets) would be disastrous to the People, Environment and the City of Toronto's physical and mental Health.

It's likely there's a lovely artistic rendering of the proposed project; however the People, Environment and City of Toronto doesn't need a pretty package of toxicity &/or potential air crash disaster.

Please vote NO to Jets on Toronto's Waterfront.
Thank you.

Sincerely,

Subject: FW: Submission to HIA Island Airport Jet Proposal

>>> 10/16/2013 10:29 am >>>

I am against the Island Airport Jet Proposal of Robert Deluce. This does have potential to destroy the waterfront of Toronto, ruin the beautiful island parks as the allowing of full-size jets to use the airport will surely cause further enlargement of this small airport. It is not needed on the waterfront especially when the link to Pearson is being built making it easy to get to Pearson Airport which is where commercial air traffic should take place.

I also believe it is a safety hazard which is even more worrisome than the deterioration of the use of the Island parkland and the city side of the waterfront. Large jets landing and taking off right next to the large population of the city centre has the potential for serious accidents causing death and destruction right downtown. Other health hazards include the jet fumes contaminating the air and the noise they cause. Even without the new "whisper jets", the noise of the planes landing and taking off from the island airport has been terribly irritating over the years that Porter has been monopolizing the airport. I even understand the pilots with small planes which were fine and interesting to watch landing and taking off have had difficulties with Porter and their ability to use the airport has been diminished.

My husband and I are are sailboat sailors and have used the harbour for many years. It is a lovely picturesque recreational area and the sight of sailboats moving back and forth coming going is a very relaxing sight. Tourists are attracted to this area feeding the economy of the city. This resource is already gradually receding as the buoys that are in place to mark the "no go" areas off of the airport have made the harbour smaller in size already and now we hear the lengthening of the runways will diminish the sailing area and size of the harbour even further. The western gap will be almost unusable and the harbour will no longer be a relaxing place to sail. As Toronto grows and the density increases downtown, Toronto needs all the recreational areas it can get.

There is nothing good to say about the Deluce proposal. I am not against having an airport on the island but I feel it should be only used for small recreational not commercial planes. This area must be preserved for enjoyment of Toronto as a recreational area. This is no place for a commercial airport.

Subject: FW: Submission to HIA Island Airport Jet Proposal

>>> 15/10/2013 2:28 PM >>>
Dear Stephanie Gower:

Jets at Billy Bishop Airport, aka the Island Airport and Toronto City Airport, will increase air and water pollution for Toronto in general, increase noise pollution in the waterfront area, and risk fuel spills in Toronto harbour that would further pollute the city's water supply. As well, the construction of the extended runways that would be necessary to accommodate jets at the island airport would mean adding landfill to the harbour, thereby harming the ecology of Lake Ontario and having a further negative effect on the waterfront.

Sincerely,

_____

Subject: FW: Submission to HIA Island Airport Jet Proposal

>>> 10/13/13 7:18 AM >>>
Health Canada must be dunned to either conduct or commission a definitive study on the health impacts of all aircraft noise, with a particular emphasis on sleep impact and the results of sleep disturbance for all segments of our residential and workplace population.

Given the demand to amend the contract by incorporating jets aircraft, it follows that Toronto must prepare in advance for Porter to request night flights. Therefore thinking ahead is essential.

To: "sgower@toronto.ca" <sgower@toronto.ca...
Date: Friday, October 18, 2013 9:33 AM
Subject: RE: [CommunityAIR] Health Study -list of noise, air, traffic issues
CC: "board@bqna.org" <board@bqna.org>, "avaughan@toronto.ca" <avaughan@toron...

I sent the statement I made for my deputation at the city's Executive Meeting concerning the disabled in our co-op. (Windward Co-op) I sent it to Agni on the 16th of Oct. I just hope it gets passed on.

Date: Fri, 18 Oct 2013 06:20:58 -0700

Subject: Re: [CommunityAIR] Health Study -list of noise, air, traffic issues
To: sgower@toronto.ca; agni_papageorgiou@golder.com
CC: board@bqna.org; avaughan@toronto.ca

Dear Stephanie and Agni:

It was really nice to meet you both at last week's HIA. The one week turn-around for responses has proven problematic for members of our board.
As noted below by , it did fall over the Thanksgiving holiday weekend.
With this in mind I would kindly request that letters from the BQNA and its member buildings be given the weekend to write our response to your request for community and public input. As the neighbourhood most affected by the airport, we would appreciate this consideration. Please let me know today so we can have the letters written over the weekend and sent to you on Monday.

Sincerely,

Joan Prowse
BQNA Representative

To: core@lists.communityair.org
Sent: Thursday, October 17, 2013 10:53:59 PM
Subject: [CommunityAIR] Health Study -list of noise, air, traffic issues

Fyi my notes on health study forwarded to City yesterday, below and attached.

Sent: October 17, 2013 1:56 AM
To: 'Agni_Papageorgiou@golder.com'; 'Stephanie Gower (sgower@toronto.ca)'
Cc: 'Christopher Dunn'
Subject: BBTCA HIA -concerns and issues

Hi Agni,

Further to your email below, please consider the following very preliminary list of issues and concerns, supplementary to the workshop discussion on Oct 9, 2013.

The list is prepared and forwarded tonight to meet today's tight deadline of Oct 16, 2013. I am sending this email without proof-reading at 1:45am in recognition of today's deadline. I might be following up to clarify on some of these points. (Note that today's deadline was established by the City one week after the workshop, such that the week spans the Thanksgiving long weekend.)

Requests concerning Dec 2013 Health Study Report Contents

1. Please provide a matrix of how the potential health impacts relate to the health assessment factors. Ie. 'physical health, mental health, and well-being impacts' versus 'environmental, economic, social and cultural factors'. It is not clear.

2. Please tabulate all typical potential mitigation alternatives that could be considered for both the health impacts and health factors, and identify those that the study team focused on in the study.

3. Please provide a more fulsome list of relevant key resource documents that the study team believe are most applicable for this health study, for waterfront stakeholders to educate themselves.

4. Please provide information to the extent required by the Council Decision Items of May 7, 2013 (see attached page 2).

5. Please confirm if there are any health benefits possible for any waterfront stakeholders of introducing jet aircraft at Island Airport ie. are we only looking at a negative situation.

6. Please document specific populations reviewed and their geographic location. Per HIA Background materials, breakdown the populations based on: physical environment, social environment, income and employment considerations, genetics, and child development.

7. Please document the potential impacts to the physical health, mental health, and well being of the public.

Health Scenarios

8. Three airport operating scenarios were presented to the public for the first time on Oct 9, 2013. These have not yet been defined for the study team or the public. Please clarify the following for each scenario:

(a) Specific horizon years assumed for each scenario

(b) Number of slots of Q400 vs CS100 for each scenario
(c) terminal building/ gate configurations, terminal building, runway capacities, hush houses, etc. assumed for each scenario (What potential outcomes of Airport Master Plan not yet completed are assumed.)
(d) ultimate airport service capacity and unused airport capacity under each scenario
(e) slot schedules assumed for each scenario, clearly showing time and concentration of arrivals and departures separately, marked at 15 minute intervals. (Increased concentrations of flight movements affect health impact intensity. Departing pax will use Eireann Quay over longer duration than arriving pax.)
(f) buffer times between runway movements assumed, including time separating the turning on of each plane engine on any part of the airport grounds
(g) flight passenger slot loading and associated boarding pass rationing assumptions for each scenario, broken down into 15 minute intervals
(h) the proportionate increase in number of heavy post maintenance runups relative to May 2012 numbers
(i) the assumed number of planes moving on the ground simultaneously, or with engines turned on at any one time prior to using the runway

Data Collection (Noise, Air, Traffic)

9. Please provide a list of all test conditions that are typically reviewed prior to commencing Data Collection, and then clearly identify those actually investigated in the report.

10. Please calculate the statistical relevancy of technical data collected.

11. Please document the exact time, duration, and method of data collection.

12. Please document proposed net increase in background pollution anticipated due to Pearson heavy rail link.

13. Please comment on extent of reduction in health impact of airport since May 2012 due to reduction in airport passengers.

Electronic Modeling (Noise, Air, Traffic)

14. Please clearly document how electronic models used under the Health Study for the Dec 2013 report were calibrated and validated.

15. Please summarize all test criteria, comparing the standards against the study findings.

Noise Health Impact Technical Work

16. Please document conditions at comparable airports with respect to residential tower proximity and ability to overlook airport ground activities from resident sleeping and living quarters. A direct line of sight is a direct line of sound.

17. Please confirm healthy number of sleeping hours for community members ie. were Signatories reasonable in agreeing to current operating hours of airport or ferry.

18. What is maximum decibel reading at pillow elevation permissible that will ensure any community member at any age will not be woken up by airport runup, ferry, or flights.

19. Discuss dBA vs dBC measurement thresholds with respect to monitoring window rattling effects and sleep deprivation.

20. Provide a feasibility review of installing permanent web-enabled noise monitoring equipment on the outside of towers at targeted elevations.

21. Provide information with respect to emerging community noise mapping projects using smart phones, which can input into airport noise management programs.

22. Please provide information on banning car alarms from airport parking lots.

23. Provide practical advice for residents in coping with all airport related noise impacts and resulting stress from sleep deprivation eg. any dietary considerations, exercises during mid day to improve alertness at work due to airport sleep loss exhaustion.

24. Summarize all airport related noise impact considerations: flight movements on runways and in air beside towers, plane warm-ups and taxiing, ferry horn blasts, rolling luggage noise annoyance concerns, post maintenance runups, helicopter night flight noise propagation and reflection, etc.

25. Summarize order of magnitude of existing Q400 noise considerations eg. takeoff noise at bedroom windowpane ranging 75dBA, ferry noise impact during sleeping hours ranging 64 dBA at bedroom windowpane, etc

26. Please assess impact of constant roar from multiple planes warming up or rolling around simultaneous at any time of day, and impact of planes lining up at end of runway pointed toward residents in May 2012 (photos available) eg. there is sometimes a noise peak as plane turns a corner.

27. Quantify number of bedroom windowpanes which no longer meet MOE interior noise criteria of NEF=0.

28. Confirm which waterfront buildings are Class 2 vs Class 1 under MOE noise criteria. At what tower elevation or storey do residential units change from Class 1 to Class 2. (Eg. in 2002, I used to sit on bench after work beside ferry slip and hear my pulse over the faint dull white noise of Gardiner Expressway. This indicates that 34 Little Norway Crescent and adjacent park would be assessed at Class 2. Any units facing Gardiner Lakeshore would be Class 1. Please confirm for Dec 2013 report.)

29. Document the geographical range and statistical likelihood of the Actual 0 NEF Contour location. Need to look at external face of buildings as waterfront towers do not have noise protection or HVAC capable of supporting AC during summer months and are designed with large south facing bedroom windows to open 24/7 to cool lake breezes eg. takeoffs audible at Queen Street.

30. Confirm max vibration criteria to avoid wakeup from rattling windows (airborne vibration) or ferry operation (waterborne vibration transmitting to bedroom floor).

31. Provide practical guide for residents in obtaining, using and understanding noise meters and vibration meters.

32. Document ambient (ie. background) noise as it varies across the waterfront, at targeted elevations, over the 24 hour day. The ambient noise must exclude any airport impact related noise ie. desirably excludes ferry conveyance system so that full cumulative impact of airport operation can be understood.

33. Please quantify modeled data for Leq (1), Leq (8), so that City can actually look at the noise impacts (not as shown in workshop presentation). Also need to breakout Leq (evening) for MOE Class 2 areas so that City can evaluate appropriateness of as-constructed waterfront building materials to withstand airport noise.

34. Document in report that residents currently do not have possibility of 8 hours of sleep due to approved slot schedule, curfew violations, helicopter movements, airport maintenance construction activities during sleeping hours, and ferry operation and testing schedule (which only guarantees 3.75 hours quiet prior to commencement of ferry testing at 4am).

35. Please include graphs and clearly document in Dec 2013 report the relationship between passenger loading, fuel weight by destination, and the resulting noise impact at various tower elevations. An example comparison table, including the current typically empty new flight runs, would be helpful.

36. Please assess the volume of noise pollution which is not benefitting anyone eg. a noise event assumed for Q400 flying into Toronto with 10 people and departing with 20 people. The value of each unit of noise pollution supporting the under-capacity Q400, affecting all waterfront stakeholders, is low. This information will assist in establishing noise efficiency benchmarks for noise impact vs slot count.

Air Pollution Health Impact Technical Work

37. Please document assumptions with respect to recovery timeline of US Mid-West, which is the primary source of Toronto air pollution.

38. Please obtain samples of film forming on area yachts and balconies to confirm human safety for children's toys, and also cleaning requirements for external brickwork and various HVAC systems.

39. Please document health and safety issues related to the transportation and handling of various fuels.

40. Please provide a simulation of the anticipated impact on surrounding residential towers and areas should there be a massive aircraft fuel explosion (of a truck, an underground tank, an aircraft or any combination thereof) for each Health scenario eg. which tower windows will implode with air pressure from blast.

41. Please document meteorological statistics for airport, including applicable stats relevant to health impacts. For example:

(a) Wind direction re plumes
(b) Wind speed re distance
(c) Updrafts on water surface
(d) Barometric high/low pressure
(e) Temperature
(f) Calm reflective water surface

Traffic Health Impact Technical Work

42. Please set up stakeholder meeting to discuss Transportation Study immediately. The Transportation Study has not yet been completed or issued, and is critical in completing the Health Study.

43. Please provide summer grid lock operating assumptions, and discuss ambulance access to Little Norway Crescent.

44. Further to the above comments regarding the 3 Health Scenarios presented Oct 9, 2013, please clarify the following for each scenario:

(a) Passenger modal split breakdown
(b) Number of employment trips to and from airport including modal split
(c) Total trips in each direction on each leg of Bathurst/ Queens Quay intersection.
(d) Assumed volumes of idling on Lakeshore boulevard caused by increased southbound movements with trip ends at airport.
(e) Assumed volumes of taxis idling on Eireann Quay.
(f) Assumed circling passenger traffic looking for airport parking and effects of idling traffic inside Bathurst Quay eg. south end of Little Norway Crescent
(g) Assumed number of employee parking trips and location of parking.
(h) Maximum number of trips assumed on east leg of Bathurst/ Queens Quay intersection, including modal split, in conformance with Queens Quay Revitalization EA Study document and appendices.
(i) Assumptions for additional circling tourist traffic at Bathurst/ Queens Quay intersection destined for Ripley Aquarium (traffic not considered under Queens Quay Revitalization).
(j) Road and transit infrastructure assumed for each scenario eg. post-Queens Quay Revitalization road capacity, transportation network configuration, and transit service frequency and capacity assumptions

Report Disclaimers

45. Please issue each report with professional seal eg. engineer's stamp, signed and dated.

46. Please label each report 'Very Preliminary Draft'.

47. Please include a statement on the introductory page of the Dec 2013 report in large bold font size which states: "Work covered by this document was commenced in October 2013 to meet a November 2013 report deadline, established by Council in advance of a December 2013 Council vote on whether CS100 jets should be approved at the Island Airport. This report deadline does not allow for some standard project protocols to be carried out. Some fundamental engineering practices were either partially completed or otherwise not carried out in order to meet the deadline established for the study team. Some of the technical information presented herein may not be legally supportable under 'balance of probabilities' testing and/or under 'fair and reasonable' testing. "

48. Immediately following the above, please include any disclaimers which Golder needs to insert in order to protect themselves corporately, keeping the onus of responsibility for the report contents and findings solely with the City of Toronto. Please also include in the report all disclaimers which Golder felt compelled to include in their approved professional services proposal.

49. Please explicitly state on the introductory page of the report that the contents, opinions, and findings

of the Dec 2013 report are exclusively those of the City of Toronto.

50. Please include in the report the typical flowchart showing study steps, and identify the steps where shortcuts in methodology or process was necessary in order to meet the unrealistic Council deadline for Dec 2013.

Hal Beck

From: Papageorgiou, Agni [mailto:Agni_Papageorgiou@golder.com]
Sent: October 10, 2013 4:14 PM
Cc: Stephanie Gower (sgower@toronto.ca)
Subject: BBTCA HIA Workshop - Thank You

Hi all,

Thank you for taking the time to participate in the Health Impact Assessment workshop last evening. As promised, please find attached a copy of the background document which includes the different ways that members of the public can provide additional comments on the HIA. Please submit any additional written issues or concerns you would like to be considered by Toronto Public Health as part of the Health Impact Assessment by October 16 to myself, or Stephanie Gower at sgower@toronto.ca.

Thanks,
Agni

Agni Papageorgiou (M.Env.Sc., B.Sc., B.A, IAP2 Certificate) | Social and Environmental Services Consultant | **Golder Associates Ltd.**
141 Adelaide Street West, Suite 910, Toronto, Ontario, Canada M5H 3L5
T: +1 (416) 366 6999 | **D:** +1 (416) 366 6999 Ext. 2201 | **F:** +1 (416) 366 6777 | **C:** +1 (416) 458 5244 | **E:** Agni_Papageorgiou@golder.com | **www.golder.com**

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Core mailing list
Core@lists.communityair.org
http://lists.communityair.org/mailman/listinfo/core_lists.communityair.org

Hal Beck is YQNA's representative in matters regarding the Island Airport. On October 16, 2013 he sent the following document, listing issues, questions and process suggestions to Golder and the Waterfront Secretariat who are conducting the City's Health Study pertaining to a Jet Expansion of the Island Airport.

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31. Provide practical guide for residents in obtaining, using and understanding noise meters and vibration meters.

32. Document ambient (ie. background) noise as it varies across the waterfront, at targeted elevations, over the 24 hour day. The ambient

noise must exclude any airport impact related noise ie. desirably excludes ferry conveyance system so that full cumulative impact of airport operation can be understood.

33. Please quantify modeled data for Leq (1), Leq (8), so that City can actually look at the noise impacts (not as shown in workshop presentation). Also need to breakout Leq (evening) for MOE Class 2 areas so that City can evaluate appropriateness of as-constructed waterfront building materials to withstand airport noise.

34. Document in report that residents currently do not have possibility of 8 hours of sleep due to approved slot schedule, curfew violations, helicopter movements, airport maintenance construction activities during sleeping hours, and ferry operation and testing schedule (which only guarantees 3.75 hours quiet prior to commencement of ferry testing at 4am).

35. Please include graphs and clearly document in Dec 2013 report the relationship between passenger loading, fuel weight by destination, and the resulting noise impact at various tower elevations. An example comparison table, including the current typically empty new flight runs, would be helpful.

36. Please assess the volume of noise pollution which is not benefitting anyone eg. a noise event assumed for Q400 flying into Toronto with 10 people and departing with 20 people. The value of each unit of noise pollution supporting the under-capacity Q400, affecting all waterfront stakeholders, is low. This information will assist in establishing noise efficiency benchmarks for noise impact vs slot count.

Air Pollution Health Impact Technical Work

37. Please document assumptions with respect to recovery timeline of US

Mid-West, which is the primary source of Toronto air pollution.

38. Please obtain samples of film forming on area yachts and balconies to confirm human safety for children's toys, and also cleaning requirements for external brickwork and various HVAC systems.

39. Please document health and safety issues related to the transportation and handling of various fuels.

40. Please provide a simulation of the anticipated impact on surrounding residential towers and areas should there be a massive aircraft fuel explosion (of a truck, an underground tank, an aircraft or any combination thereof) for each Health scenario eg. which tower windows will implode with air pressure from blast.

41. Please document meteorological statistics for airport, including applicable stats relevant to health impacts. For example:

(a) Wind direction re plumes
(b) Wind speed re distance
(c) Updrafts on water surface
(d) Barometric high/low pressure
(e) Temperature
(f) Calm reflective water surface

Traffic Health Impact Technical Work

42. Please set up stakeholder meeting to discuss Transportation Study immediately. The Transportation Study has not yet been completed or issued, and is critical in completing the Health Study.

43. Please provide summer grid lock operating assumptions, and discuss

ambulance access to Little Norway Crescent.

44. Further to the above comments regarding the 3 Health Scenarios presented Oct 9, 2013, please clarify the following for each scenario:

(a) Passenger modal split breakdown
(b) Number of employment trips to and from airport including modal split
(c) Total trips in each direction on each leg of Bathurst/ Queens Quay intersection.
(d) Assumed volumes of idling on Lakeshore boulevard caused by increased southbound movements with trip ends at airport.
(e) Assumed volumes of taxis idling on Eireann Quay.
(f) Assumed circling passenger traffic looking for airport parking and effects of idling traffic inside Bathurst Quay eg. south end of Little Norway Crescent
(g) Assumed number of employee parking trips and location of parking.
(h) Maximum number of trips assumed on east leg of Bathurst/ Queens Quay intersection, including modal split, in conformance with Queens Quay Revitalization EA Study document and appendices.
(i) Assumptions for additional circling tourist traffic at Bathurst/ Queens Quay intersection destined for Ripley Aquarium (traffic not considered under Queens Quay Revitalization).
(j) Road and transit infrastructure assumed for each scenario eg. post-Queens Quay Revitalization road capacity, transportation network configuration, and transit service frequency and capacity assumptions

Report Disclaimers

45. Please issue each report with professional seal eg. engineer's stamp, signed and dated.

46. Please label each report 'Very Preliminary Draft'.

47. Please include a statement on the introductory page of the Dec 2013 report in large bold font size which states: "Work covered by this document was commenced in October 2013 to meet a November 2013 report deadline, established by Council in advance of a December 2013 Council vote on whether CS100 jets should be approved at the Island Airport. This report deadline does not allow for some standard project protocols to be carried out. Some fundamental engineering practices were either partially completed or otherwise not carried out in order to meet the deadline established for the study team. Some of the technical information presented herein may not be legally supportable under 'balance of probabilities' testing and/or under 'fair and reasonable' testing. "

48. Immediately following the above, please include any disclaimers which Golder needs to insert in order to protect themselves corporately, keeping the onus of responsibility for the report contents and findings solely with the City of Toronto. Please also include in the report all disclaimers which Golder felt compelled to include in their approved professional services proposal.

49. Please explicitly state on the introductory page of the report that the contents, opinions, and findings of the Dec 2013 report are exclusively those of the City of Toronto.

50. Please include in the report the typical flowchart showing study steps, and identify the steps where shortcuts in methodology or process was necessary in order to meet the unrealistic Council deadline for Dec 2013.

Hal Beck

Subject: FW: regarding Health impact assessment.

>>> 10/15/13 3:24 PM >>>
Dear Stephanie Gower:

Jets at Billy Bishop Airport, aka the Island Airport and Toronto City Airport, will increase air and water pollution for Toronto in general, increase noise pollution in the waterfront area, and risk fuel spills in Toronto harbour that would further pollute the city's water supply. As well, the construction of the extended runways that would be necessary to accommodate jets at the island airport would mean adding landfill to the harbour, thereby harming the ecology of Lake Ontario and having a further negative effect on the waterfront.

I urge you to ensure that Toronto Public Health remain faithful to its stated mission of reducing health hazards and improving the health of the whole population of the city, and that it accordingly reject in perpetuity the idea of jets at Billy Bishop Airport.

Thank you.

best regards

To: <cdunn@toronto.ca>, <wps@toronto.ca>, <sgower@toronto.ca>
Date: Thursday, October 17, 2013 6:27 PM
Subject: Comments on the Effects of Expansion and Use of Jets at the Island Airport
CC: <councillor_mcmahon@toronto.ca>, <councillor_vaughan@toronto.ca>

October 17,2013
To: Chris Dunn, Project Manager wps@toronto.ca and cdunn@toronto.ca
Stephanie Gower, Department of Public Health sgower@toronto.ca

I resided at Arcadia Cooperative on the north side of Queens Quay West, opposite Little Norway Park for almost a decade, and with much sadness and reluctance decided to forfeit the significant social and economic benefits of living within that close community in October, 2012, for health reasons which I sincerely believe are associated with the air and noise pollution now prevalent in the immediate area of this residential precinct of the city, caused directly and indirectly by the rapid commercial expansion of the nearby island airport since 2006. Air pollution from regular landings and take-offs of Q400 turboprop planes, and their prolonged 'engine run-ups', with the pungent smell of 'jet' fuel often in the air, wafting north. Air pollution from many, many cabs and limos idling all around the neighbourhood, wherever they can find a spot to park or rest, waiting for an airline passenger pickup. Air pollution from the many taxis and limos dropping off such passengers. Noise pollution from all of this, especially the Q400 engine run-ups which howled through the neighbourhood, the sounds ricocheting back and forth and off of the newly constructed tall condo buildings to the north, east, and west.

I gradually experienced hearing loss and had to spend several thousand dollars on hearing aids. I have a pronounced shortness of breath, in spite of the fact that I have exercised regularly as a canoeist, based at the QCYC, and as a daily bicyclist, and am a non-smoker. I had recently been diagnosed with mild emphysema and do wonder how that will end. Fortunately, unlike an unusually high incidence at Arcadia Cooperative, I seem to have thus far avoided contracting cancer. My monthly housing costs have more than doubled, and I am away from many good friends. I had been on the Board of Management of the Harbourfront Community Centre, a member of the Citizen-Police Liaison Committee for this area, a Director and Treasurer of the Harbourfront Community Association, and Director and Treasurer of the Friends of Toronto Islands, which has been working closely with Parks Dept. to make visits to the islands more rewarding and memorable, as well as more frequent. I was on the Building Maintenance Committee of Arcadia Cooperative. I was a member of QCYC, on Algonquin Island. I was deeply engaged with the community. And yet I felt forced out. I am not alone, as other Arcadians have recently departed for similar reasons, I understand. Several friends in nearby condos have moved away, selling to people who are unaware of the real experience of living next door to a commercial airline hub.

I moved myself to the Beaches, and my sailboat from Harbourfront to Cathedral Bluffs Yacht Club further east. Residents in the Beaches are starting to complain about the frequency of the noise from passing commercial turboprop planes. They don't know what noise is.

I must ask, very personally, would **you** not have decided to move away, quite regardless of social and cost factors, confronting the same conditions?

Please read the short article on WHO's report on air pollution effects, released earlier today, as reproduced below.

Yours truly,

Published on Thu Oct 17 2013

LONDON- The air we breathe is laced with cancer-causing substances and should now be classified as carcinogenic to humans, the World Health Organisation's (WHO) cancer agency said on Thursday.

The International Agency for Research on Cancer (IARC) cited data indicating that in 2010, 223,000 deaths from lung cancer worldwide resulted from air pollution, and said there was also convincing evidence it increases the risk of bladder cancer.

The WHO is a Geneva-based agency of the United Nations focused on international public health matters.

Air pollution, mostly caused by transport, power generation, industrial or agricultural emissions and residential heating and cooking, is already known to raise risks for a wide range of illnesses including respiratory and heart diseases.

Research suggests that in recent years, exposure levels have risen significantly in some parts of the world, particularly countries with large populations going through rapid industrialization such as China.

"We now know that outdoor air pollution is not only a major risk to health in general, but also a leading environmental cause of cancer deaths," said Kurt Straif, head of the IARC's monographs section, which is tasked with ranking carcinogens.

"The air we breathe has become polluted with a mixture of cancer-causing substances."

In a statement released after a week-long meeting of experts reviewing the latest scientific literature, IARC said both outdoor air pollution and "particulate matter"—a major component of it—would now be classified among its Group 1 human carcinogens.

That ranks them alongside more than 100 other known cancer-causing substances in IARC's Group 1, including asbestos, plutonium, silica dust, ultraviolet radiation and tobacco smoke.

IARC's monographs program, sometimes known as the "encyclopaedia of carcinogens", aims to be an authoritative source of scientific evidence on cancer-causing substances.

Although both the composition and levels of air pollution can vary dramatically from one location to the next, IARC said its conclusions applied to all regions of the world.

IARC's director, Christopher Wild, said the agency's decision to classify outdoor air pollution as carcinogenic to humans was an important step towards alerting governments to its dangers and potential costs.

"There are effective ways to reduce air pollution and, given the scale of the exposure affecting people worldwide, this report should send a strong signal to the international community to take action," he said.

Subject: FW: Health Assessment of BBTCA Expansion Proposal

>>> 10/16/2013 1:16 PM >>>
Stephanie Gower
Toronto Public Health

Dear Ms. Gower:

I am a sailor at the National Yacht Club, located at the foot of Stadium Road directly north of the Billy Bishop Toronto City Airport's main runway. I also Chair the Sailing School committee that oversees the Club's youth sailing program, a program available to children of members and the public at large.

Two areas related to health and safety exist in my thinking on the topic of the proposed expansion of the BBTCA, with consideration of longer runways and the use of jet aircraft at the airport. I would like to see them addressed in the Health Impact Assessment being undertaken by Golder Associates.

First is a health consideration: I would like to see a clear estimation of the increased on-ground exhaust emissions that would result from the use of jet aircraft at the airport. Most useful would be a comparison of the exhaust emissions of jets such as the Bombardier CS100 to the emissions of the currently-used Bombardier Q400 turboprops, perhaps on a per-aircraft basis. My main point relates to the emissions created on the ground by jets performing engine run-ups, taxiing, and taking off, and my main concern is for the health of Club members and youth sailors, who at NYC are in extremely close proximity to the runway.

Second, related to proximity, is the risk of jet blast from these proposed jet aircraft. I do not know whether the dangers of jet blast fall under the purview of a Health Impact Assessment or not, but the City's consultant, Airbiz, in their report to the City stated "A jet blast analysis would be recommended for all new aircraft types under consideration for use at the BBTCA to ensure the compatibility of aircraft operations with marine operations." (http://www.toronto.ca/bbtca_review/pdf/city-airbiz-interim-findings-062513.pdf page 5.). To date I do not believe this analysis has been done. Whether Golder Associates conducts this analysis, or whether it is handled by another consultant, it really must be done from a safety point of view.

Best regards,

Subject: FW: Health assessment for Toronto Island Airport expansion proposal

>>> 15/10/2013 2:29 PM >>>
To: Stephanie Gower, Toronto Public Health

Re: Impact of noise and pollution on the Toronto waterfront
Date: October 15, 2013

I live between Lawrence Avenue and the 401, which happens to be under the flight path for Bombardier planes coming to Downsview for maintenance. I am very familiar with aircraft noise and often feel tempted to duck when they fly really low. I am also a frequent visitor to the Toronto islands so I have the same reaction when crossing Toronto harbour as a Porter Air flight lands at Billy Bishop, only the noise of engine backwash adds an insult to the senses.

I am aware of several campaigns to stop airport expansion and the approval of jets for Porter Air. Mr. Deluce appears to ignore the fact that he agreed to abide by the tripartite agreement limiting noise, traffic and types of aircraft appropriate for such a congested waterfront area. However, having lost money on his venture over the years it appears he is set on ramping up an expansion of Porter Air at the expense of most Torontonians, who live, play or work at the waterfront or who have as taxpayers contributed to the redevelopment of the waterfront as a tourist attraction and residential rather than industrial area.

May I bring to your attention to fact that jets are not quiet; some are quieter than others and the CS100 appears to be better than most according to reports from the one test flight. However, all planes approaching or leaving the island airport fly quite low over the harbour, and adjacent to populated areas both on the islands and at Harbourfront. These areas contain schools, summer camps, sailing schools, boating clubs, a music garden, waterside cafes and entertainment venues as well as houses, apartments and condo buildings. The islands alone attract two million visitors a year to the amusement park, pristine beaches and picnic areas. These people will be exposed to much more noise and pollution. Planes fly out of Billy Bishop every three minutes and every minute in peak times. Adding more planes will affect both the safety of those close to the water and certainly the health of those exposed to higher levels of traffic.

Please also consider the fact that a fast link to Pearson will be completed before any jets could be in service at Porter, thereby making expanded service on the island redundant as well as a health and safety risk.

Thank you for your attention and I ask that you make city councillors aware of the health hazards presented by any airport expansion or addition of jets.

Yours,

Subject: FW: Aircraft noise tied to higher heart disease risk

>>> 15/10/2013 1:12 PM >>>
Hi,

Please consider this article in your assessment of health concerns for Billy Bishop Airport. Thank you.

I thought you'd like this:
http://cbc.sh/WhDMdnd

Aircraft noise tied to higher heart disease risk

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Aircraft noise tied to higher heart disease risk

City planners need to consider noise when planning to expand or build airports

CBC News Posted: Oct 09, 2013 11:21 AM ET Last Updated: Oct 09, 2013 2:17 PM ET

Related Stories

- Airport-area homeowners want city to buy their land
- Island airport tunnel causing noise problems for some

External Links

- Airport noise and cardiovascular disease editorial, BMJ
- Aircraft noise and cardiovascular disease near Heathrow airport, BMJ
- Residential exposure to aircraft noise and hospital admissions for cardiovascular diseases, BMJ
- Aircraft noise management in Canada

(Note: CBC does not endorse and is not responsible for the content of external links.)

Living in neighbourhoods with high levels of aircraft noise is associated with a higher risk of cardiovascular disease, U.S. and British research suggests.

Two studies published in Wednesday's British Medical Journal offered "preliminary evidence that aircraft noise exposure is not just a cause of annoyance, sleep disturbance and reduced quality of life but may also increase morbidity and mortality from cardiovascular disease," an accompanying editorial said.

In one study, Francesca Dominici's team at Harvard School of Public Health in Boston found a higher rate of admission to hospital with cardiovascular problems among people aged 65 and older living near 89 airports in the U.S. in 2009.

On average, zip codes with 10 decibel higher aircraft noise had a 3.5 per cent higher cardiovascular hospital admission rate. The association remained after taking socioeconomic status, demographic factors, air pollution proximity to roadways into account in the analysis.

The association between hospitalization for cardiovascular disease and noise was strongest for those exposed to the most noise. (Kirsty Wigglesworth/Associated Press)

The association was strongest for those exposed to the most noise.

In total, an estimated two per cent of hospitalizations for cardiovascular disease in the study subjects were attributable to aircraft noise.

City and town planners "need to take this into account when extending airports in heavily populated areas or planning new airports," Stephen Stansfeld, a professor at Queen Mary University of London who was not part of either research team, wrote in a journal commentary.

Hugh Davies is an associate professor in the school of population and public health at the University of British Columbia, where he studies the non-auditory health effects of noise.

"We would expect to find the same results around comparable Canadian airports," Davies said of the Harvard research.

"I think the evidence linking noise and heart disease is sufficient enough to warrant it being considered in any health impact assessments of new airport development," he added in an email.

Davies said the EU has responded to evidence of the role of noise in heart disease, sleep disturbance and stress with a risk-reduction strategy.

A second study looked at about 3.6 million residents living near London's Heathrow airport, one of the world's busiest airports.

As in the U.S. study, researchers obtained levels of aircraft noise from aviation authorities.

"We identified significant excess risks of stroke, coronary heart disease, and cardiovascular disease, especially among the two per cent of the population affected by the highest levels of daytime and nighttime aircraft noise," Anna Hansell from Imperial College London and her co-authors concluded.

Some factors that could have affected the results, such as age, sex, ethnicity, social deprivation, smoking, air pollution, and road traffic noise, were also considered.

Questions that remain to be answered include whether noise at night or in the day is more important and if there are safe levels of exposure, Davies said.

The U S study was funded by the Federal Aviation Administration The British study was funded by Public Health England

With files from Reuters

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October 13, 2013

Submission Re: the Public Health Impact Study of Billy Bishop Airport

My name is and I have

I also have personal experience of the Billy Bishop Airport as a Toronto Island Resident. I appreciate this opportunity to submit my thoughts on the scope and content of Toronto Public Health's Health Study on impacts of airport expansion plans.

The Scope of the Concerns Addressed by the Health Study

I urge you to build on the foundations of a broad ecosystem definition of health for the study rather than limiting the scope to current measurable data on human health for the three scenarios. A healthy waterfront contributes to a healthy City and to public health. In the past, considerable efforts have been made to examine the components and priorities of a healthy waterfront and significant investments have been made in implementing waterfront improvements. I would direct you to the City's own website chronology of these efforts. http://www.toronto.ca/waterfront/chronology.htm.

In the early 1990s the Royal Commission on the Future of Toronto's Waterfront carried out an in-depth study of waterfront health over three years. Commissioner David Crombie examined all diverse uses of the waterfront and the challenges of maintaining democratic, equitable access to its amenities. He did individual studies on *Environment and Health Report #1, Pathways: Toward an Ecosystem Approach #11, Environment in Transition # 10,* and *Planning for Sustainability #12* and a *Report on Transportation #?.* In total the Commission issued 28 publications summarized in their final report *Regeneration* that was released in 1991. These reports have set the agenda and goals for all of the continuing revitalization efforts that have followed. Care will need to be taken to ensure your health study enhances the goals of these efforts and of the City's Official Plan for the waterfront and balances health protection for all waterfront users.

Water impacts should be included in your study.

Fuel and other emissions contribute to particulate matter in air that will deposit into the water under the flight paths adding to the general degradation of water quality and contribute to contaminated sediment legacies in the inner Harbour. Dredging of contaminated sediments in the Keating Channel by the Port

Authority requires costly containment in confined disposal cells because of these contaminants.

While drinking water intakes for the Island Filtration are deep in the lake north of the Island, this plant that supplies downtown Toronto, is located very near to the airport and could be impacted by accidents like the ones that have occurred nearby. http://searoom.com/toronto-island-airport/.

The health of the Inner Harbour is dependent on the hydrology and flows through the western gap. Diminishing these flows by extending the runway further out into the Gap could have impacts on harbour quality. Debris and contaminants deposited by the Don River into the inner Harbour are dispersed by the pull through the gap out into Lake Ontario. While this dilution is certainly not the ideal solution to this pollution it is a necessary phenomenon. The Great Lakes Water Quality Agreement has designated Toronto Harbour as a Great Lakes Area of Concern and required a Remedial Action Plan (RAP) to restore impaired uses to make it swimmable, drinkable and fishable. That Plan has been completed and is managed by the Toronto Conservation Authority. It has benefited from stakeholder involvement as well as huge investments by all levels of governments in remediation. Your recommendations for the options that involve lake filling could potentially set back the RAP remedial efforts.

In the 1990s concerns about the impacts of lake fill on water quality. It became known that the majority of the construction fill being deposited to make up the Leslie Street Spit, coming from the construction boom of underground parking and high rise construction, was contaminated. Any fill from sites near to roadways was contaminated with lead from times when there was leaded gasoline. Other historic contaminants from earlier uses of these construction sites were found. The Port Authority profited from providing a convenient dumping site for the construction industry in the Lake. However, there was never adequate environmental assessment of the practice of lake filling. The Port Authority only had visual inspections of the 1,500 trucks a day backing up to the Lake and dumping their fill. Their operations were also criticised because unlike other Great Lake cities, they did not fill behind revetments or barriers in Toronto. Consequently, plumes of soil were seen to extend far into the Lake where water intakes were. efforts resulted in some improvements in a Lake Fill Quality Assurance Program requiring developers to do spot tests of soils. I am not confident that these spot checks have prevented continuing contamination from large quantities of lake fill.

Cumulative studies need to capture all sources of harmful exposures

Toronto Public Health is well placed to consider cumulative air impacts and exposures because they have carried out the first All Sources Air Study in the South Riverdale and Beaches. The findings of those studies demonstrated that the largest exposures to harmful contaminates are attributable to diesel traffic

from trucks at highway intersections. CAREX Canada lists diesel as the highest priority carcinogen to target for elimination in outdoor air to limit community exposures.

Given these findings, I would urge your consultants, Golders & Associates to cumulate local neighbourhood surface traffic contributions with the plane fuel statistics. These should include traffic sources from the nearby arteries of the Gardiner Expressway, the Lakeshore, Bathurst and Queens Quay as well as the increased diesel from the trucks delivering the increased volumes of fuel needed for each of the flight scenarios under consideration. Future rail diesel will also contribute. As I previously mentioned deposition to water of de-icing and fuel contaminates should be assessed. Some consideration should be given to the full route involved in the transport of the airplane fuels from their origins from Ontario refineries to Billy Bishop. These deliveries may have impacts outside Toronto.

Health needs to include safety

As an Islander I am keenly aware of the potential of accidents and spills. There have already been small plane crashes in the park and harbour close to recreational boaters and passenger ferries. I often find myself ducking when planes that often rely on visual landmarks to navigate, stray off their flight paths. Inclement weather contributes to risk when fog obscures visual navigation or large storms necessitate diversion of planes to larger airports.

There is wide consensus that climate change will mean more intense storms in the Great Lakes region. The need for emergency response plans and risk assessments for all three scenarios should be part of your study. These should include a number of risks including crashes, environmental spills, explosions and risks associated with the transportation, storage and handling of increased volumes of volatile fuels, de-icing and other hazardous substances involved in airport operations.

During the Royal Commission on the Future of Toronto's Waterfront there was informative testimony from Richard Denison a Washington, D.C. environmentalist. He told the story of how a water treatment plant across the Potomac River from the White House was moved as soon as authorities there realized the risks posed by volatile liquid chlorine needed for operations. Commissioner Crombie sought out this testimony because the 1979 Mississauga train derailment also involving liquid chlorine. That derailment almost required the unimaginable – an evacuation of all of downtown Toronto including the Island until fortuitously the wind shifted.

Weather conditions in Toronto cause temperature inversions that hold all particulates in the air close to the ground in the summer on bad air days. The convergence of an accident with one of these inversions needs to part of emergency planning and evacuation.

As a result of this testimony Commissioner Crombie changed the protocol for the delivery of liquid chlorine to the Ashbridges Bay Waste Water Treatment Plant. He recommended that deliver tanker limit deliveries to early in the morning to limit risk from traffic accidents and also reduce storage on site to volumes needed for one days operation.

I would urge you to recommend a similar precautionary plan for the delivery of fuel to the airport to limit risk on the roads to local neighbourhoods, as well as to insure that risks are limited with the volumes of fuel stored on site for each scenario. Right now fuel tankers have to cross the runways to the storage tanks to deliver fuel. This has potential to increase risk with increased fights and need for increased fuel four fold. I think some assurances are needed for each scenario that it is feasible to refuel and turn around these increased takeoffs and landings on that small footprint with out extending hours and putting public safety at risk.

Vulnerable communities

Children and families

Local children living in the central waterfront and attending school there are increasingly vulnerable to air pollution and pollution from vehicles as well as airport emissions. Many of these children will develop asthma and need puffers and become further sensitised to particulate matter (PM). A recent study now links PM to increased risk of diabetes. Air patterns in Southern Ontario generally have been demonstrated to be so poor that children attending summer camps from outside the area display respiratory distress with in a few weeks.

This year the condo construction and infrastructure replacement for the Pan Am Games and overall traffic congestion has increased these exposures on the waterfront. Public transit options have diminished with the closure of easterly traffic on Queens Quay until 2015, the closure of the Queens Quay subway stop, loss of the Spadina Streetcars and construction at Union Station. The foot of Spadina and of Bathurst are completely congested with idling cars trying to get on the highways. Under these conditions higher exposures can be expected to continue over the next several years.

I am keenly aware of the role the waterfront has in the lives of children. Vulnerable communities in Toronto need the rare green space that the Toronto Islands provide. I am confident that the use of the Waterfront and Island Park this summer has been higher than ever. There is no other family friendly reasonable green space in the Inner City. Families using the Island are new Torontonians, visitors and low-income people who cannot afford cottages or parking. The Parks offer a clear modest simple green escape and beaches that are unparalleled in other recreational venues in the inner City. Those who visit the residential community find experience an

alternative to living in traffic. I hear children asking their parents if they can live here. I wish they could. There are no playgrounds between Jarvis and the Bathurst Quay School on the waterfront.

The Island Natural Science School is a shared treasure. It is in the park near to the airport and is attended by students who come primarily from the condos along the waterfront. Students from all over the GTA also use this school. They visit for weeklong environmental education. Many of these urban kids find their first experience of nature, wildlife and ecology there. The use of jets and increased traffic and the associated increased noise, emission and environmental impacts is an incompatible use with this school as well as with the public school at Bathurst Quay. Suggestions have even been made that the schools should be moved to resolve these incompatibilities.

Wildlife and the airport are also in conflict. In the last decade there has been surprising growth in diversity of Island wildlife. Coyotes, beaver and mink have migrated here as other habitat disappears. Yet there have to be efforts to oil eggs and evacuate geese (in planes) to Ohio because they are threats to planes. Ironically when Canada Geese were near to extinction in North America, a program at the former Island school led to their resurgence and repopulation. The valuable of this green space to wellbeing of families, children and biodiversity should be counted and measured in your study. It is palpable and transformational.

As an Island senior, I am part of another vulnerable community impacted by the airport expansion. Due to the legislation governing Island leaseholders and the quashing of plans for a co-op there is little mobility and an aging population on Toronto Islands. The majority of the 700 residents are over 50. Many are developing chronic diseases that come with aging so access to health care and emergency response and medevac options are becoming increasingly important. Dozens of my neighbours have developed cancers over the last decade and wonder how our demographics for chronic diseases compare to our mainland neighbours. People experience all of the grievances associated with noise from the airport and sleep disruption.

One concern I have relates to how the extension of the runways will impact access to the Islands. When ice forms in the harbour, icebreakers are used to cut paths through the ice. However it is vital that that ice can flow out the Western Gap. Often the dock at Ward’s Island is icebound, (it is where the ferry service to the residential community goes). An alternative route needs to be taken which extends the trip by 20 minutes. Residents, children attending the Island School and filtration plant and parks staff need to be bussed to Hanlan’s Point Dock for because the water flows in the area mean ice is not as likely to be trapped. On occasion we have had to make emergency crossing of the runways at the airport and use their ferry, or now the tunnel. This of course is discouraged. Just as the lake filled extensions of the runway may impact contaminate build-up in the inner

harbour it also will impact ice build up and access to Toronto Island for all users during the winter months.

I am aware that the Island airport has saved lives as patients are medevac'd there from throughout Ontario and it is closest to Toronto hospitals. At the meeting there were some suggestions that helicopters might no longer be given access. What are the alternatives and are they viable? Your health study should look at this impact which is clearly the difference between life and death and include in your studies ground trip times to transport patients to hospitals and if they will be impacted by increased passenger and air traffic at Billy Bishop for each scenario.

In conclusion, I would like to reiterate that you have been handed an impossible task to do a thorough quality health study in an impossible time frame. I strongly feel that the optimal health study needs to include all of the parameters of health. I am sure this challenge will not escape Dr. David McKeown, the Medical Officer of Health who has done so much to extend the reach of public health to inform all aspects of Torontonians' wellbeing.

Yours truly,

To: <sgower@toronto.ca>
Date: Thursday, October 10, 2013 3:27 PM
Subject: some links to documents

Dear Stephanie,

I wanted to send you links and references to reports mentioned last night. These are previous efforts and on-going ones underway with wisdom on restoration and sustaining a healthy waterfront. These could inform your health study and care should be taken to ensure there are no conflicts between your efforts and their goals.

The Great Lakes Water Quality Agreement requires that all degraded areas of concern in the Great Lakes draft and implement Redial Action Plans. The Toronto plan is in place and is still striving to restore impaired uses. Here is a link to their materials.wwwtorontorap.ca
I would also suggest that you speak with Brian Denney of the Toronto Conservation Authority about this RAP, the issues of health of the inner harbour and the importance of maintaing flow regimes to its health and concerns that lake filling could negatively alter these flows.

Also as I mentioned former Mayor David Crombie was appointed as Commissioner of a Royal Commission on the future of Toronto's Waterfront in the early 1990s. This Commission was an exhaustive series of studies of all aspects of a healthy waterfront and issued in depth reports all the components contributing to this health. Those reports and his final report "Regeneration" in 1991 should be housed in the City Hall library. If they are not there the Canadian Environmental Law Association's library has them.

Here is a link that might work.
http://www.waterfronttrail.org/pdfs/books/regeneration/cover%20-%20pages%207-10.pdf

I left a copy of the 2013 annual report of CAREX Canada on exposures to harmful carcinogens with Monica. This database cites diesel as the substance in outdoor air most harmful.You should share this with Golders who have extrapolated components of diesel in their preliminary list.
http://www.carexcanada.ca/en/reports/

Thank you for all your efforts to scope your study. Do not hesitate to contact me for clarification.
Sarah Miller

From: Stephanie Gower <sgower@toronto.ca>
Sent: Tuesday, October 08, 2013 10:12 AM

Cc: Papageorgiou, Agni; Carol Mee
Subject: Re: Health Consultation

Dear ,

Thank you for your response and your interest in the Health Impact Assessment that is being conducted to explore the potential impacts of expanding service at Billy Bishop Airport. The number of participants at this workshop is limited in an effort to balance representation from a range of community and public health organizations while creating an opportunity for focussed discussions to explore the issues that the communities and public health experts are concerned about. We have reached capacity for this workshop. While there are no additional spaces for you to participate in the workshop, any concerns you would like to identify will also be considered as part of the Health Impact Assessment. Here are the ways members of the public can provide input into the Health Impact Assessment:

- Toronto Public Health will consider all written submission received by October 16 as input to the HIA. You can submit written submission by email to myself, or Stephanie Gower at Toronto Public Health at: sgower@toronto.ca
- There is still an opportunity to provide input through the City's consultation website at http://cityoftoronto.fluidsurveys.com/s/BBTCA/; any health concerns raised in the survey will be considered within the HIA (Survey closes October 11)
- Toronto Public Health will participate in the public consultations that are planned for November and being coordinated by the City Manager's Office
- Once the findings of the Health Impact Assessment are released, there will be opportunities to depute at Executive Committee (December 5) or the Board of Health (December 9). To speak at the Board of Health meeting or to submit comments to the Board of Health in writing, please email boh@toronto.ca. For deputations or written submissions to Executive Committee, please email exc@toronto.ca.

Please let me know if you have any questions.

Kind regards,

Stephanie

_____
Stephanie Gower, PhD
Research Consultant
Healthy Public Policy
Toronto Public Health
277 Victoria St, 7th Floor
Toronto, Ontario, Canada, M5B 1W2

Tel: (416) 338-8101
Email: sgower@toronto.ca

>>> 08/10/2013 8:40 AM >>>

Dear Ms. Gower:

I am a resident of the South Beach Marina Townhomes and recently heard news of the public consultation health impact meeting that is scheduled for this Wednesday night. As our townhomes are within 300 yards of the runway, we are surprised and outraged that the city of Toronto did not reach out to South Beach in the community here on Stadium Rd. and MOST affected by the proposed expansion plans. The airport currently affects our mental and physical health perhaps more than anyone in the community. I have heard news that other co-ops in the area have been solicited to attend the meeting, but that South Beach was left off the invitation list totally.

Would you please consider having a representative from our townhomes attend this meeting? I am happy to attend and bring information back to the South Beach residents and board. Please contact me with your decision at your earliest convenience. I have blocked the scheduled meeting times in my schedule so that I may be able to attend on this moment's notice.

Many thanks,

To: "sgower@toronto.ca" <sgower@toronto.ca>
Date: Friday, October 11, 2013 4:33 PM
Subject: health impact assessment for the expansion of Billy Bishop Airport

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Hello Stephanie:

I understand that you are conducting a health impact assessment for the expansion of Billy Bishop Airport and collecting submissions from the public on this issue. While I'm not an expert on health related issues, I can say that I'm a concerned citizen and would like to voice my concerns through this platform.

At the moment I use Billy Bishop for short haul business trips and I enjoy the ease of access that the airport provides in the downtown core. Because the airport is small, travelling even to the US, is quick and easy. It's easy to get in and out of the airport and quick to get through immigration and customs. Increasing the capacity of the island airport will completely undermine the reason it's currently so useful and a great downtown resource. If there's going to be a rapid rail line between Union and Pearson, why is it even necessary to increase air traffic at Billy Bishop? It doesn't take a strategic foresight planner to see that bigger and more planes at BB will ultimately cause slower travel times for business travelers, create traffic issues getting into and out of the airport where none currently exists, cause traffic and noise issues for local residents, cause undo stress on plants and animal life in the area (after taking time and tax dollars to create a beautiful park and bird sanctuary on the Leslie spit and the public spaces on the Toronto islands) and make an even bigger mess of our already distressed waterfront (which has become a view for a few). And lastly, I'm concerned about the noise factor which being a beach resident is a concern for me. The great planners in this fair city have left so little waterfront for public enjoyment, why destroy the small bits of sanctuary that we have left for the public by creating overhead noise and distraction. It does seem that expanding the airport is putting the financial business benefits of a few over the enjoyment of many. It just seems to be an odd choice and again, given there will be a direct link between downtown and Pearson, not to mention the fact that the government is once again considering an airport in Pickering, it does seem that expanding the existing Billy Bishop airport is really not in the best interests of the greater good, but rather business advantage for a select few.

These are my submissions.

Respectfully,

Subject: FW: health impact of jets

>>> 10/15/13 4:40 PM >>>
Back in 2007, Honourable Jim Flaherty announced that the government would invest up to $10 million over the following four years in the ecoMOBILITY program. This was actually a transportation initiative. John Baird, Minister of the Environment at the time said that this was "action to deliver real reductions in air pollutants, greenhouse gas emissions and harmful substances in our communities".

We are in 2013 and it seems that the same government along with the Toronto Port Authority and City could possibly contemplate adding jets to the already horrendous existing waterfront air and auto traffic. Absolutely not one iota of preventable pollution should be added the harbourfront/airport area. It is shameful that expansion and additional jet fuel dispersion has been allowed to proceed only 400 feet from mainland schools with asthmatic children, from apartment balconies where people with breathing difficulties live, from family homes built in the 80's and an active, thriving community centre.

There should not be expansion. If Porter needs jets, let them move to Pearson. No Porter at the Island Airport, no problems.

The question of safety when there are over 70 high-rise condos within a four-square block north of Queens Quay arises. The entire waterfront area has exploded with activities and businesses. The Air Canada Centre is fairly close. The prospect of even one plane crashing off course into that area is devastating, likewise into a regatta or marina on the lake.

The waterfront is the wrong place for heavy commercial passenger traffic. It was supposed to be prevented by the Tripartite Agreement, but it has become useless. The TPA simply goes to Ottawa and gets a federal law changed. Our Mayor claims sky-high economic benefits, without consideration of consequences. No expansion, no jets, should be permitted without a citywide vote of Torontonians. They have always rejected any fixed link to the Islands. That battle has been lost, thanks to the TPA's desire to accommodate Porter expansion. People should come first, not jet planes and profits.

October 7, 2013

To: Golder Associates
RE: Health Impact Assessment for Billy Bishop Toronto City Airport expansion

We, the board of South Riverdale Community Health Centre, wish to express our concerns about the proposed expansion of the Billy Bishop Airport to include jet airplanes. Our organization provides a range of clinical and health promotion services in East Toronto. We know from experience and research that a clean environment is essential for good health. Jet fuel exhaust contains toxins that are known contributors to climate change and are known to be harmful for one's health. Why would we expose Torontonians and our environment to such toxic chemicals? The addition of jet planes will only add more pollution to an air shed already saturated with contaminants (All Sources Cumulative Air Study, City of Toronto).

Toronto's poor air quality is already having a negative health impact, particularly on vulnerable groups such as children, seniors and those will chronic diseases (McKeown, 2005). Currently, asthma is the most common chronic disease in Canadian children (To, 2006). A wide range of outdoor air pollutants such as ozone, carbon monoxide, particulate matter (PM), nitrogen dioxide, sulphur dioxide, polyaromatic hydrocarbons (PAHs) and diesel exhaust have been linked to causing asthma and triggering attacks (Cooper, 2011). Many of these contaminants are found in jet fuel exhaust. Jet fuel exhaust also includes black carbon which is also linked to lung disease and higher rates of asthma and bronchitis in school-aged children (Castro, 2010).

In addition to the respiratory effects of jet fuel by-products, there are also links to cancer, adverse pregnancy outcomes and neurodevelopmental effects. PAH's, a chemical by-product of jet fuel exhaust, are toxic to genes and can cause cancer (Castro, 2010). Prenatal exposure to PAHs has also been associated with lower scores on the mental development indices i.e. IQ scores (Perera, 2006, 2009). Elevated levels of polycyclic aromatic hydrocarbons (PAH) are found in the area. Exposure to PAHs has been associated with reproductive abnormalities with exposure during pregnancy (Dejmek 2002, Choi, 2006). Given what we already know about the negative effects of jet fuel exhaust, we are concerned that allowing larger jets to fly into the island airport will increase the incidence of asthma-related illness and other adverse health effects.

According to the city's hired consultants, emission from the new jets "will exceed that of the Dash8-Q400 [current Turboprop engine] (Airbiz, 2013 pg 24). The most we can hope for is that the new jets, that are untested to date, will meet "most international emission standards" (Airbiz, 2013, pg 24). That is not good enough. Adding pollution to an air shed that is, according to a recent study, at capacity places the health of Torontonians at risk. Until just recently Toronto has not understood the cumulative impacts of <u>all sources</u> of air pollution. The all-source air pollution study of South Riverdale-Leslieville–Beaches discovered that three contaminants, nitrogen dioxide, benzene and fine particulate matter, already exceed limits set out in the Ontario Ministry of Environment's Ambient Air Quality Criteria (AAQC). The modeling suggests this is likely the case for most communities across Toronto.

The City needs to reduce sources of air pollution not add more. We can look to the horizon on a hot summer day and see the greenish grey layer. We can read the daily Air Quality Health Index. We believe that expanding the island airport to jets will increase emissions for Toronto which will trigger more smog days, an increase in respiratory illnesses such as asthma and bronchitis, and expose Torontonians to more cancer-causing and neurotoxic chemicals. The people who will be most affected will be vulnerable populations such as pregnant women, children, seniors, and those with chronic diseases.

We thank you for your attention to this matter and for the thoughtful inclusion of our concerns in the Health Impact Assessment process.

Respectfully yours,

Board of South Riverdale Community Health Centre

CC:
Stephanie Gower, Toronto Public Health
Christopher Dunn, City of Toronto Project Manager
City of Toronto Executive Council
City of Toronto Board of Health
City of Toronto Waterfront Secretariat
Greater Toronto Area Community Health Centres (through the GTA CHC Executive Directors Network)

References:

Airbiz Report (2013) Billy Bishop Toronto city airport Porter Airlines proposal review: Interim results/findings. http://www.toronto.ca/bbtca_review/pdf/city-airbiz-interim-findings-062513.pdf

Castro et al, (2010). Santa Monica Health Impact Assessment (HIA). http://www.healthimpactproject.org/resources/document/Santa-Monica-Airport.pdf

Choi et al (2006) International studies of prenatal exposure to polycyclic aromatic hydrocarbons and fetal growth. *Environ Health Perspect*, 114(11): p. 1744 -1750.

City of Toronto (2011). An All Sources Cumulative Air Quality Impact Study of South Riverdale - Leslieville – Beaches. http://www.toronto.ca/teo/pdf/aqs-2011-06/00_executive-summary.pdf

Cooper K, Marshall L, Vanderlinden L and Ursitti F (2011) *Early Exposures to Hazardous Chemicals/Pollution and Associations with Chronic Disease: A Scoping Review: Executive Summary.* A report from the Canadian Environmental Law Association, the Ontario College of Family Physicians and the Environmental Health Institute of Canada. The complete report is available at www.cela.ca

Dejmek et al. (2002) The impact of polycyclic aromatic hydrocarbons and fine particles on pregnancy outcome. *Environ Health Perspect*, 2002. 108: p. 1159-1164.

McKeown, D. (2005) Influence of Weather and Air Pollution on Mortality in Toronto. Toronto Public Health, Toronto. http://www.toronto.ca/health/hphe/pdf/weather_air_pollution_summary_june_2005.pdf

Perera et al (2006) Effect of Prenatal Exposure to Airborne Polycyclic Aromatic Hydrocarbons on Neurodevelopment in the First 3 Years of Life among Inner-City Children. *Environ Health Perspect*, 114: p. 1287-1292.

Perera et al (2009) Prenatal Airborne Polycyclic Aromatic Hydrocarbon Exposure and Child IQ at Age 5 Years. *Pediatrics*. 124: p. e195-e202.

To T, Gershon A, Tassoudji M, Guan J, Wang C, Estrabillo E, Cicutto L. (2006) The Burden of Asthma in Ontario. ICES Investigative Report. Toronto: Institute for Clinical Evaluative Sciences.

Sent: Tuesday, October 08, 2013 7:58 PM
To: sgower@toronto.ca; Papageorgiou, Agni
Subject: October 9th Health Impact Assessment Workshop

Good evening Agni and Stephanie,

I am unavailable to attend tomorrow's Health Impact Assessment Workshop and would like provide you with a written submission.
I take my cue from the comment form that I received at the end of the September 19th meeting.

1. What are the key reasons why the airport **should** allow jets?
- there are no reasons why the airport should allow jets.
- for the sake of the waterfront, the health of its residents and visitors, the airport should be closed.
- very important: the Board of Health etc. need to look at the air and noise pollution levels prior to 2006 expansion for baseline levels as there was no independent Environmental Assessment conducted at that time.
- review all the EA that TPA has paid for – perhaps even conduct independent EA.

2. What are the key reasons why the airport **should not** allow jets?
- excessive noise already exist with Q-400's.
- noise and air pollution from Q-400's is already unacceptable.
- the EA paid for by the Toronto Port Authority stated that there would be significant air & noise pollution issues – so much so that the mitigating factors recommended were that every unit in every home/apartment surrounding the airport should have triple-glazed windows and individual H/VAC units equipped with a HEPA filter. None of the CityHomes or Housing Co-operatives and the majority of Island homes have these extreme systems in place. How could the airport allow Q-400's in the first place. Jets would make things worse.
- review the intent of the Tripartite Agreement. It is in place to protect the citizens from this kind of assault.

3. What are the possible terms and conditions if jets are allowed?
- there are no possible terms and conditions to allow jets. No jets should ever be allowed.
- terms and conditions should have been vigilantly observed before everyone dropped the Tripartite Agreement ball and allowed Q-400's in the first place.
- runway extensions are detrimental to the entire waterfront.

4. Other Comments:
- the island airport is on parkland, at the end of a cul-de-sac, in the middle of a residential neighbourhood and school zone. If it were an asbestos mine, there would be no argument. It would be shut down.
- the hours of operation at this island airport do not allow for 8 hours of sleep in what is in reality a bedroom community. No industry should be allowed to operate in an area where citizens come home to sleep, concentrate at school, enjoy a clean, green waterfront that all 3 levels of government are continuing to establish in spite of this airport.
- review the non-independent EA's.
- review airplane fuel trucks in a residential neighbourhood and the dangers of these trucks passing directly in front of a school/daycare/community centre.
- review an airport in the middle of migratory bird flight paths and a bird sanctuary.
- have a look at what airplane fuel and de-icer does to our drinking water.

- have a look at what airplane fuel does to our air quality.
- have a look at what excessive noise (already in place with Q-400's) does to public health.
- taxis, limousines, customer cars using the bike lanes from Bathurst to Stadium road as auxiliary parking for the airport.
- court case still in the works regarding the definition of general aviation (not Porter) versus limited commercial flights (that would be Porter).
- Transport Canada playing fast and loose with the Tripartite Agreement.
- allowing jets would increase traffic, create more excessive noise & air pollution.
- increasing the runways to accommodate jets would disrupt boat traffic and spread excessive noise & air pollution further along our waterfront.

I would like to thank you all for doing the right thing.

Sincerely,

Subject: FW: Billy Bishop Airport Health Impact Assessment

>>> 10/16/2013 11:33 AM >>>

Dear Stephanie Gower:

To the extent that my personal research has been conclusive, I agree with the following:

Jets at Billy Bishop Airport, aka the Island Airport and Toronto City Airport, will increase air and water pollution for Toronto in general, increase noise pollution in the waterfront area, and risk fuel spills in Toronto harbour that would further pollute the city'?s water supply. As well, the construction of the extended runways that would be necessary to accommodate jets at the island airport would mean adding landfill to the harbour, thereby harming the ecology of Lake Ontario and having a further negative effect on the waterfront.

I urge you to ensure that Toronto Public Health remain faithful to its stated mission of reducing health hazards and improving the health of the whole population of the city, and that it accordingly reject in perpetuity the idea of jets at Billy Bishop Airport.

Thank you!

Subject: FW: Re:

>>> 10/15/13 6:28 PM >>>
Dear Stephanie Gower:

While I really appreciate having a downtown airport, and have been a Porter customer, I fear that jets at Billy Bishop Airport, aka the Island Airport and Toronto City Airport, will increase air and water pollution for Toronto in general, increase noise pollution in the waterfront area, and risk fuel spills in Toronto harbour that would further pollute the city's water supply. As well, the construction of the extended runways that would be necessary to accommodate jets at the island airport would mean adding landfill to the harbour, thereby harming the ecology of Lake Ontario and having a further negative effect on the waterfront.

I urge you to ensure that Toronto Public Health remain faithful to its stated mission of reducing health hazards and improving the health of the whole population of the city, and that it accordingly reject in perpetuity the idea of jets at Billy Bishop Airport.

Thank you.

From: Stephanie Gower <sgower@toronto.ca>
Sent: Monday, October 07, 2013 3:33 PM
To: Judy Williams; Papageorgiou, Agni; ; Christopher Dunn; Councillor McConnell; Councillor Vaughan; Fiona Chapman; Jennifer Chan; Monica (Public Health) Campbell; Thomas Davidson; ;
Cc: Carol Mee; Ronald (Public Health) Macfarlane
Subject: Re: FW: Windward Coop registration / Oct. 9 Health Impact Meeting

Dear ,

First, I wanted to advise you that both the Windward Co-op and the Canadian Federation of Naturists will be included in the October 9 stakeholder consultation. I have answered your additional questions below:

Can you tell me which of the three levels of assessment we are about to conduct?

This will be a screening-level HIA

Can you tell me if the resulting Screening Tool form and accompanying draft report has already been made public and where we can find it, has TPH included "public involvement at the Screening level" as an opportunity "to review the Screening Tool form and Screening Report, and the opportunity to comment on the HIA Screening decision"?

Appendix C-1 of the framework provides the basic screening Tool TPH uses for HIAs. This tool will be used to guide the input sought during the stakeholder workshop to be held this week.

The screening approach and the findings of the HIA will be made public by the end of November. There are a couple of ways to provide input on the findings:

- Toronto Public Health will participate in the public consultations that are planned for November and being coordinated by the City Manager's Office to explore findings of all the studies underway for the proposed expansion.
- Once the findings of the Health Impact Assessment are released, there will be also opportunities to depute at Executive Committee (December 5) or the Board of Health (December 9). To speak at the Board of Health meeting or to submit comments to the Board of Health in writing, please email boh@toronto.ca. For deputations or written submissions to Executive Committee, please email exc@toronto.ca.

Toronto Public Health's HIA Framework states four guiding principals. How are you meeting the first on Democracy?
TPH is striving to balance the need for public and stakeholder consultation with the constrained timelines imposed on this HIA by City Council. Input from the public will be considered within the HIA in a number of ways:

- concerns raised during the public consultations that were organized by the City of Toronto were documented and will be considered in the Health Impact Assessment;
- Toronto Public Health will consider all written submission received by October 16 as input to the HIA;
- There is still an opportunity to provide input through the City's consultation website at http://cityoftoronto.fluidsurveys.com/s/BBTCA/; any health concerns raised in the survey will be considered within the HIA (Survey closes October 11);
- Toronto Public Health will participate in the public consultations that are planned for November and being coordinated by the City Manager's Office;
- Once the findings of the Health Impact Assessment are released, there will be opportunities to depute at Executive Committee (December 5) or the Board of Health (December 9). To speak at the Board of Health meeting or to submit comments to the Board of Health in writing, please email boh@toronto.ca. For deputations or written submissions to Executive Committee, please email exc@toronto.ca.

Has the Terms of Reference List been established by the Steering Committee yet, and if so what are they? Who is on the HIA Steering Committee and does it include representatives from the affected population and neighbouring communities?

A HIA Steering Committee is usually a feature of a scoping-level HIA rather than a screening-level HIA. The HIA being undertaken for the BBTCA is a screening-level HIA.

Who selected Golder Associates as the Health Consultants?
Were they procured competitively and by what criteria were they selected?
Golder worked with Toronto Public Health on a HIA of biosolids management options at the Highland Creek Treatment Plant. If you would like to see how the process was applied in that case please see http://www.toronto.ca/legdocs/mmis/2011/pw/bgrd/backgroundfile-37363.pdf. Golder also worked with the Toronto Environment Office and Toronto Public Health on the cumulative air quality study carried out for South Riverdale, Leslieville, and the Beaches (Please see http://www.toronto.ca/teo/local-air-quality-studies-riverdale.htm). Their previous experience on these two projects was a key reason they were hired for the HIA. They were hired through a process co-ordinated by the City Manager's Office.

Who are the HIA's invitees and confirmed attendees?
Pending permission of the participants, the list of participants will be made public after the workshop.

May we arrange for the HIA Workshop to be audio and video recoded and made public?
The details of the workshop including presentation materials, discussion questions and materials, and input collected from participants will be made public in written format after the workshop. The format of the discussion is dominated by small group discussions which are not well-supported by audio and video recordings.

Regards,

Stephanie

Stephanie Gower, PhD
Research Consultant
Healthy Public Policy
Toronto Public Health
277 Victoria St, 7th Floor
Toronto, Ontario, Canada, M5B 1W2

Tel: (416) 338-8101
Email: sgower@toronto.ca

>>> "Papageorgiou, Agni" Agni_Papageorgiou@golder.com> 03/10/2013 4:12 PM >>

Sent: Wednesday, October 02, 2013 12:35 AM
To: Christopher Dunn; Monica (Public Health) Campbell; Judy Williams; Papageorgiou, Agni; ; jchan@toronto.ca; councillor_vaughan@toronto.ca; councillor_mcconnell@toronto.ca; tdavids2@toronto.ca;

Subject: Re: Windward Coop registration / Oct. 9 Health Impact Meeting
Importance: High

Hello Stephanie,

Thank you for your responses.

I should have copied in Councillors Adam Vaughan and Pam McConnell from the start. I have done so now.

Hello Adam and Pam,

This email is regarding processes, transparency, criteria in selecting key community stakeholders, and exclusion of other key community stakeholders

in the October 9th Health Impact Assessment Workshop at Metro Hall.

September 30, I emailed Toronto Public Health and Golder Associates the following questions:

1) Why was the public not invited to the health impact assessment workshop?

2) Who are the invitees and what criteria were they chosen by?

3) What are the processes to be applied in this health impact assessment workshop?

4) Can the public or additional members of organizations attend as observers?

5) Will the workshop be recorded in video and audio, and be made public?

6) May we allow Windward Coop and Federation of Canadian Naturists to attend as key stakeholders? Both of these organizations are key community stakeholders who were not invited.

October 1, Stephanie Gower of Toronto Public Health responded to my questions. Thank you Stephanie. A couple of the responses are still unclear or not addressed, to which I will readdress further below.

October 1, Judy Williams of Federation of Canadian Naturists responded to Stephanie Gower's responses with additional questions summarized here:

7) Why is the Federation of Canadian Naturists, as representatives of Hanlan’s Point Beach recreational users, not on the list of key stakeholders?

8) Who selected the key stakeholders and why is the list not made public?

9) Why is there secrecy with respect to the invitees?

10) Will the proceedings be recorded by electronic or digital means? Nothing replaces an open microphone whereby everyone can hear the meetings proceedings.

Stephanie, further to your responses, the following are my updated questions.

Inclusion of Windward Coop

You indicate that there are specific groups who might be more vulnerable, such as children's health. I strongly encourage Toronto Public Health to include Windward Coop as a key community stakeholder at the HIA workshop. In addition to directly facing Billy Bishop airport, Windward Coop has a higher than average population of vulnerable residents. It is the first fully-accessible co-op in Toronto and current home to a much higher than norm population of elderly residents, people with disabilities including paraplegia, and low income occupants. http://windwardcoop.ca/in-the-media/articles/

HIA Processes

Thank you for the link to Toronto Public Health's HIA Framework http://www.toronto.ca/health/reports/pdf/draft_hia_framework.pdf.

Can you tell me which of the three levels of assessment we are about to conduct: screening assessment, limited scope assessment, or in-depth HIA?

If it is a limited scope assessment, can you provide background information indicating that limited scope is sufficient?

3.3 of the HIA Framework: Public Involvement in HIA Screening

Can you tell me if the resulting Screening Tool form and accompanying draft report has already been made public and where we can find it?

Also, has TPH included "public involvement at the Screening level" as an opportunity "to review the Screening Tool form and Screening Report, and the opportunity to comment on the HIA Screening

decision"?

2.2 of the HIA Framework: Guiding Principles

Toronto Public Health's HIA Framework states four guiding principals. How are you meeting the first on Democracy?

This principal emphasizes "the right of people to participate in a transparent process for the formulation, implementation and evaluation of policies that affect their life"

It also stresses "emphasis on public and stakeholder participation." Finally, the flow chart on page 12 clearly demonstrates public participation throughout the entire HIA process, from screening to monitoring and evaluation.

HIA Steering Committee

Who is on the Steering Committee and does it include representatives from the affected population and neighbouring communities?

4.3 Developing the Terms of Reference

Has the Terms of Reference List been established by the Steering Committee yet, and if so what are they?

Golder Associates

Finally, who selected Golder Associates as the Health Consultants?

Were they procured competitively and by what criteria were they selected?

I can appreciate the amount of work TPH is undertaking in this HIA process,

however there are many questions that need to be addressed in the name of transparency, accountability and public involvement.

I hope the TPH can understand these critical aspects that are the right of citizens, who are also key stakeholders in this health concern.

Many thanks for your time,

Subject: FW: Submission to HIA Island Airport Jet Proposal

>>> 10/12/13 6:37 PM >>>
Re island Airport
It is inconceivable that this discussion is even being entertained.
But having said that I guess for a long time (40 years) resident of Toronto it is important to make my strong objections to jets/airport expansion known once again.
Aside from noise and air pollution both of which are so adamantly denied by the Porter people, there is even, I think, a more serious repercussion to this insidious plan and that is stress...stress on residents, stress on resources, stress to those who can no longer freely use the waterfront for recreation.
There is only one waterfront....an airport on the waterfront is not the necessity that it is claimed to be. Tourists and business travellers use the island because it is convenient. Denying access to jets from that location is not going to keep these travellers from coming to Toronto. The claim that flying jets from the island will improve the economy is nonsense. There is no evidence to support that. We should have been providing convenient, expedient travel to Pearson for years now. If the city had done this, there would not be any discussion about usurping public lands to provide a small convenience to a few. It is truly outrageous. The stress this plan is causing is huge. I have friends who have already given up their condo due to the potential threat of jets. Can we really be discussing turning over the waterfront to jets instead of people? Does this make any sense at all Of course it is about profit....it has no bearing on quality of life for residents of toronto. Flight paths from Pearson were recently rerouted to fly over my house....I can't sit in the back yard and have a phone conversation without interruption..
Jets flying out of the island ???? If we cave into this corporate greed as happened with the horrible condo boom which took public lands for profit, well I fear there is not end and out supposed waterfront revitalization is lost forever...

Subject: FW: Health Impact Assessment, Jets on Billy Bishop Island Airport

>>> 10/15/13 3:50 PM >>>
To: Stephanie Gower, TORONTO PUBLIC HEALTH

Dear Stephanie Gower:

Jets at Billy Bishop Airport, aka the Island Airport and Toronto City Airport, will increase air and water pollution for Toronto in general, increase noise pollution in the waterfront area, and risk fuel spills in Toronto harbour that would further pollute the city's water supply. As well, the construction of the extended runways that would be necessary to accommodate jets at the island airport would mean adding landfill to the harbour, thereby harming the ecology of Lake Ontario and having a further negative effect on the waterfront.

I urge you to ensure that Toronto Public Health remain faithful to its stated mission of reducing health hazards and improving the health of the whole population of the city, and that it accordingly reject in perpetuity the idea of jets at Billy Bishop Airport.

Thanks you for giving your most thoughtful and caring attention to this matter of great civic importance.

To: <sgower@toronto.ca>
Date: Wednesday, October 16, 2013 9:40 PM
Subject: Health Impact Assessment Toronto Island Airport

Dr Gower,

"Healthy cities are cities that are prosperous, liveable and sustainable. They are cities with high quality culture, education, food, housing, health care, public transit, recreation, and built and natural environments." -- Healthy Toronto By Design, Toronto Public Health, October 2011.

Island Airport expansion and the inclusion of jet aircraft are contrary to this vision for many reasons. The issue of noise, although clearly a concern, is a convenient distraction from the other, equally serious, environmental effects of having jet aircraft on the waterfront and near a densely-populated area. The Tripartite Agreement was originally put in place to preserve the nature of the waterfront regardless of any future changes to aviation technology.

The public does not know the effects of jet emissions as current airport operations have not been properly studied for health impact (air, noise, water). In the absence of a comprehensive study on the Toronto Island Airport, the Department of Health must rely on other sources to speak to the issue of health impacts.

AIR POLLUTION

A list of some of the chemicals found in the air around airports:

Freon 11, Freon 12, Methyl Bromide, Dichloromethane, cis-l,2-Dichloroethylene, 1,1,1-Trichloroethane, Carbon Tetrachloride, Benzene, Trichloroethylene, Toluene, Tetrachloroethene, Ethylbenzene, m,p-Xylene, o-Xylene, Styrene, 1,3,5-Trimethylbenzene, 1,2,4-Trimethylbenzene, o-Dichlorobenzene, Formaldehyde, Acetaldehyde, Acrolein, Acetone, Propinaldehyde, Crotonaldehyde, Isobutylaldehyde, Methyl Ethyl Ketone, Benzaldehyde, Veraldehyde, Hexanaldehyde, Ethyl Alcohol, Acetone, Isopropyl Alcohol, Methyl Ethyl Ketone, Butane, Isopentane, Pentane, Hexane, Butyl Alcohol, Methyl Isobutyl Ketone, n,n-Dimethyl Acetamide, Dimethyl Disulfide, m-Cresol, 4-Ethyl Toulene, n-Heptaldehyde, Octanal, 1,4-Dioxane, Methyl Phenyl Ketone, Vinyl Acetate, Heptane, Phenol, Octane , Anthracene, Dimethylnapthalene(isomers), Flouranthene, 1-methylnaphthalene, 2-methylnaphthalene, Naphthalene, Phenanthrene, Pyrene , Benzo(a) pyrene, 1-nitropyrene, 1,8-dinitropyrene , 1,3-Butadiene , sulfites, nitrites, nitrogen oxide,

nitrogen monoxide, nitrogen dioxide, nitrogen trioxide, nitric acid, sulfur oxides, sulfur dioxide, sulfuric acid, urea, ammonia, carbon monoxide, ozone, particulate matter (PM10, PM2.5) and finally this compound; 3-nitrobenzanthrone.(1)

The Santa Monica Health Impact Assessment 2011 released information about the effects of airports on neighbouring communities. It was authored by paediatricians and paediatric residents at UCLA Medical Center. It should be noted that years prior, the community had legally tried, but failed, to prevent jets from flying out of this smaller scale airport. Key findings indicate that:

1. Airport operations, particularly jet take-offs and landing, are contributing to elevated levels of black carbon in the area surrounding Santa Monica Airport. Elevated exposure to black carbon is associated with:
* increased rates of respiratory and cardiovascular disease including asthma, bronchitis and increased risk for sudden death
* irreversible decrease lung function in children
* increased carcinogenic risk
2. Elevated levels of ultrafine particles (UFP) are associated with aircraft operations and jet takeoffs and are found in the area surrounding Santa Monica Airport. Elevated exposure to UFPs are associated with:
* increased inflammation and blockage of blood vessels in mice models
* greater lung inflammation with exposure to UFPs than exposure to larger particulates in mice models
3. Elevated levels of polycyclic aromatic hydrocarbons (PAH) are found in the area surrounding Santa Monica Airport. Exposure to PAH has been associated with:
✍ increased carcinogenic risk ✍ disruption of the hormonal balance in adults. ✍ reproductive abnormalities with exposure during pregnancy ✍ lower IQ scores in children.
4. Levels of noise due to plane and jet take-offs from Santa Monica Airport are above Federal Aviation Airport thresholds. Excessive noise is associated with:
✍ hearing loss. ✍ higher levels of psychological distress ✍ impaired reading comprehension and memory among children.
5. There is no buffer zone between the airport airfield and the surrounding community as observed in many other municipal airport communities. (2)

A groundbreaking study by Carnegie Mellon University in 2011 showed how the sun transforms jet engine exhaust into toxic particles. Further, "Researchers have discovered that drops of oil created by idling aircraft engines can over time turn into tiny particles that can easily penetrate the lungs and brain."(3)

Another study out of California shows the need for more comprehensive health impact assessments for smaller airports adjacent to residential communities. The

study found that there was a larger impact area from the regional airport than from a nearby freeway as per lead researcher Suzanne E. Paulson, a professor of atmospheric chemistry at the University of California, Los Angeles.(4)

Kerosene fumes, the main ingredient of jet fuel, is quite noticeable when spending time on Toronto's waterfront. But smell alone is not the only indicator of existing air pollution as illustrated in the 2002 article "Odor Perception Thresholds Versus Danger Level of Airborne Gases and Particulate Matter."(5)

PROPERTIES OF JET FUEL:

a) May be fatal if swallowed and enters airways
b) Flammable in liquid and vapor form (Hazardous Materials designation UN1863 Flammable on transport vehicles)
c) Causes skin irritation
d) May cause drowsiness or dizziness by inhalation
e) May cause irritation of respiratory system
f) Toxic to aquatic life with long lasting effects
g) Comprised of Kerosene (petroleum), Naphthalene, Ethyl Benzene, Trimethy Benzene, Ethyl Benzene.
NB: International Agency for Research on Cancer (IARC) lists kerosene as a probable human carcinogen.
NB: State of California in CAP Prop 65 lists Naphthalene as a product known to cause cancer (CAS-No.: 91-20-3). Naphthalene is classified as a Marine Pollutant and toxic to algae.

Because of the nature of jet fuel, special fire fighting measures are necessary as outlined below:

Fire Fighting Measures: Carbon dioxide (CO2), Water spray, Dry chemical, Foam, Keep containers and surroundings cool with water spray. Do not use a solid water stream as it may scatter and spread fire., Water may be ineffective for fighting the fire, but may be used to cool fire-exposed containers.

Fire Hazard. Do not use a solid water stream as it may scatter and spread fire. Cool closed containers exposed to fire with water spray. Sealed containers may rupture when heated. Above the flash point, explosive vapor-air mixtures may be formed. Vapors can flow along surfaces to distant ignition source and flash back.(6)

It should be noted that jet fuel contributed to the severity of the hangar fire in the recent fatal crash of a commuter jet at Santa Monica Airport.(7)

A recent jet fuel spill into the Lemon Creek in Slocan Valley, BC, illustrates the toxicity of jet fuel when it comes in contact with a water supply. A class action lawsuit was launched as a result of the damage caused to the surrounding environment. One of the residents noted that "the river has become a 'dead zone' after the accident."(8)

At Toronto Island Airport, current airport operations require delivery of four double-tanker truck loads of jet fuel each day via the Island Airport ferry. These trucks are also sharing space with pedestrians as well as with drivers of private and commercial vehicles. The only indication of hazardous materials on the jet fuel transport vehicles are the disproportionately small red diamond-shaped identification labels coded Flammable Liquid Class 3 UN1863: fuel, aviation, turbine engine. Clearly, passengers travelling on the Island Airport ferry are not aware of the presence of hazardous materials beneath them on the drive-on deck. The Toronto Port Authority makes no reference to the transport of hazardous goods on the ferry on their website.

A jet fuel spill in the vicinity of the water near Toronto Island Airport would be catastrophic as this is the main source of drinking water for the City of Toronto. Jet fuel is termed a marine hazard and would be toxic to fish, birds, animals and humans.

WATER POLLUTION:

Groundwater Contamination:

From my research, I have found no indication that a groundwater contamination study has ever been done at the Toronto Island Airport. Before making a decision on the introduction of jets/airport expansion, it is essential to verify existing groundwater conditions.

Firefighting Chemicals:

Soil and pond water contamination has been found downstream of Hamilton International Airport and may be a result of chemicals used in firefighting foam. Despite knowing about problems with perfluorocarbons (PFCs) since 1987, appropriate measures were not taken to prevent contamination. "The plume of

(Perfluorooctane Sulfonate) PFOS contamination from the airport extends for at least 52 km downstream." Over the years, Hamilton Airport has polluted with fuels, metals, glycol (de-icing fluid), cleaning agents, oil, grease, hydraulic fluids, and perfluorocarbons.(9)

Deicing and Anti-icing Chemicals:

Additives used to make anti-icers were the catalyst for highly toxic runoff at General Mitchell International Airport in Milwaukee, Wisconsin. Deicing and anti-icing chemicals are toxic and can end up in the air, on snowbanks, and on the ground as spraying is not done in a contained environment but performed outdoors. Depending on weather conditions, between 100 and several thousand gallons of liquid is sprayed on each aircraft during deicing. Some of the spray sticks to the plane, but 75% to 80% escapes to the surrounding environment. Groundwater and water in the vicinity of airports may be contaminated from deicing and anti-icing chemicals.(10)

Jet Fuel Dumping:

If an emergency situation occurs, i.e., a bird strike or technical failure, immediately after take-off when a plane is at its maximum weight, the pilot will need to dump fuel in order to safely land the plane. In the case of the Island Airport, jet fuel is most likely jettisoned into Lake Ontario.

Airplanes have to dump fuel because of landing weight requirements dictated by structural limitations of the aircraft or the length and condition of the runways. The difference between a takeoff weight and a landing weight can be as high as a hundred thousand pounds or more.(11)

SUMMARY:

It is critical that the Department of Health look at research above and beyond what Golder provides when determining the potential health impacts on people who live, work and play on the waterfront. I am surprised that water was not originally included in the parameters of the study. The Island Airport is a waterfront airport and, as such, its impact on the surrounding bodies of water must be thoroughly studied. Anything less would be a great disservice to the people of Toronto.

Regards,

Footnotes:

(1) "Jet Pollution the True Effects on Humans and Sedona (Airport in Colorado)" @ http://www.closetheairport.com/jet-pollution/
(2) http://www.healthimpactproject.org/resources/document/Santa-Monica-Airport.pdf
(3) http://www.news.com.au/travel/travel-updates/new-airport-health-concern-exposed/story-e6frfq80-1226054761768
(4) http://health.usnews.com/health-news/managing-your-healthcare/environment/articles/2009/12/04/smaller-airports-may-endanger-health
(5) http://www.closetheairport.com/wp-content/uploads/2012/04/odorstudyThresholdsversusdangerlevels2.pdf
(6) http://www.tsocorp.com/stellent/groups/corpcomm/documents/tsocorp_documents/msdsjetfuel.pdf
(7) http://www.latimes.com/local/lanow/la-me-ln-santa-monica-airport-jet-crash-20130930,0,4817438.story
(8) http://www.theprovince.com/news/Lawsuit+launched+over+fuel+spill+that+contaminated+creek+Slocan+Valley/8773592/
story.html
(9) http://www.thehamiltonian.net/2012/04/dr.html
http://www.thespec.com/news-story/2247400-hamilton-airport-s-water-pollution-leaves-region-with-a-dangerous-lega/
(10) http://www.geotimes.org/jan07/WebExtra012907.html
and http://www.ncbi.nlm.nih.gov/pubmed/16749681
(11) http://usatoday30.usatoday.com/travel/columnist/getline/2005-01-10-ask-the-captain_x.htm

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