

**Environmental Impact Assessment  
Of the  
International Association of Impact Assessment  
2004 Annual Conference**

**April 24-30  
Vancouver, B.C., Canada**

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## **EIA of the 2004 Annual IAIA Conference**

### **Introduction**

On April 24-30, the 2004 conference of the International Association for Impact Assessment will be held in Vancouver, B.C., Canada. This year's theme is "Industry and Impact Assessment", and the programme details a variety of activities: plenary sessions, sessions of invited and contributed papers, poster presentation sessions, technical visits, training courses and social activities. Through its conferences, the IAIA brings together persons with varied interests and backgrounds for the exchange of information and points of view. The 2004 conference expects 600-800 registrants from 70 nations, all with the goal of contributing to an increased understanding of topic areas and improvements to impact assessment processes. Participants will carefully address subject matter such as quality of assessment, financial resources for assessment, transparency of processes and many more.

As was the case for the 2002 conference at The Hague, a small team of students has been recruited to conduct an environmental impact assessment on this year's IAIA gathering in Vancouver. With limited resources and tight timelines, the students selected to assess four of eight parameters that may have impacts. However minimal the impacts may be for this particular conference, it is important to note that cumulatively, the predictions add up. Other than off-site technical visits, the main activities take place at the Sheraton Wall Center, a luxury hotel in the heart of Vancouver located near restaurants, cafes, shops and tourist attractions such as the famed English Bay and Stanley Park. Early spring is a popular time for conferences in Vancouver<sup>1</sup> and it is also the beginning of the city's tourist season.

What the students discover through undertaking the assessment process is that conferences and tourism generally can have significant impacts on the environment. The City of Vancouver and the conference venue, however, have done much to mitigate environmental impacts in advance. What follows is their summary report of the Environmental Impact of the IAIA Conference, 2004.

### **Methodology and Scoping**

Two important considerations have been made that affect the scope of the environmental impact assessment. One is that in place of public consultation, which was impossible to undertake, the team of students assumed the role of stakeholders and using their varied

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<sup>1</sup> The following conferences are scheduled for the Vancouver area in the spring of 2004:

- Canadian Health Food Association's Expo West Trade Show (April 22-25)
- American Academy of Cosmetic Dentistry's Convention (April 2-May 1)
- International Council of Toy Industries' (ICTI) Conference (April 28-30)
- EAT! Vancouver – The Everything Food and Kitchen Show (April 23-25; Expecting approx. 20,000 visitors)
- SlamCity Jam, North American Skateboarding Championships (April 30)

expertise and judgment, selected eight impact categories. (See Figure A) From here, the eight categories were ranked based on key evaluation criteria (Knight Piesold Consulting, 2003) as described below:

1. **Extent:** An impact that affects large geographic areas may be more significant than those affecting smaller areas.
2. **Magnitude:** Relates to the size of the impact, such as the amount of paper used or the amount of CO<sub>2</sub> produced.
3. **Frequency/Duration:** Refers to how often the impact will occur and for how long.
4. **Reversibility:** Refers to the capability of returning the environment to a pre-impact or productive state.
5. **Ecological Context:** Refers to the sensitivity of the environment in which the impact will occur.

The four top-ranked categories, based on the above criteria, were deemed significant and required further examination. An Impact Assessment Profile was completed for each. (See next section)

The second methodological consideration to note is that, unlike the EIA of the Hague conference in 2002, the team has not addressed the question of having an alternative to the conference. The EIA of the 2002 conference thoroughly evaluated options to hold a low-impact virtual conference and deliberated such an option against the stated goals of the IAIA. They found that for “capacity building” to be fully realized, an in-person, face to face experience was needed.

The IAIA could have chosen another Canadian city to host the '04 conference, one that would be equally appealing for delegates and would attract industry representatives, regulators, consultants, etc. The 2004 EIA team, however, did not see any particular advantage or lessening of impacts by holding it elsewhere in Canada.

Another issue raised is whether holding the conference close to the international airport effectively mitigates an environmental impact. It is the team's professional opinion that if an airport venue was chosen, conference delegates would travel into the city to visit various sites and no significant reduction in fuel consumption would be realized. In fact, the Sheraton Wall is in a “key pedestrian” area of Vancouver, with many tourist amenities located within walking distance and is well chosen to meet the needs and interests of delegates.

**Figure A: IMPACT ASSESSMENT CATEGORIES & EVALUATION CRITERIA**

<b>Impact Category</b>	<b>Extent</b>	<b>Magnitude</b>	<b>Frequency/ Duration</b>	<b>Reversibility</b>	<b>Ecological Context</b>
Water Use	0	1	0	1	1
Fuel Consumption (CO <sub>2</sub> )	0	1	0	2	1
Waste/Garbage	0	1	0	2	1
Paper Use	0	1	0	2	1
Noise	0	0	0	2	0
Energy Use	0	0	0	2	0
Pop Pressure on Local Infrastructure	0	0	0	1	0
Traffic	0	0	0	0	0

Categories were given numerical rankings (0-2) for each impact specified. For example, a rating of 0 would refer to localized, temporary, small and minor impacts. A rank of 2 would refer to large scale, irreversible, persistent and wide spread impacts.

Results showed that primary impacts are related to the following:

- **Water Use**
- **Fuel consumption**
- **Waste/garbage**
- **Paper**

Impact Assessment Profiles have been prepared for the primary impacts.

### **Impact Assessment Profile: Waste/Garbage**

#### **Nature of Impact**

The IAIA conference alone will not generate an increase in waste or garbage for the City of Vancouver or at the conference site. In a cumulative sense, however, waste and garbage will increase for this time of year and from this locale, as other conferences are occurring and the travel season is beginning. The kind of waste that may increase is of the general material type: dry recyclables, organics and residual garbage.

Waste and garbage can result in increased land filling or materials and thus, increased greenhouse gas emissions, odors and landfill space required. At this time, the waste in

place at the Vancouver landfill amounts to 11,500,000 tonnes. Its current capacity is 30,000,000 tonnes (City of Vancouver, 2004). Obviously, a four-day conference of 800 attendees will not significantly affect landfill capacity.

### **Magnitude**

While the magnitude of the impact of garbage generated by the IAIA '04 is relatively small, it can still be reduced by approximately 20% if mitigation strategies are implemented now and in the future. A luxury hotel in Hawaii tracked the performance of its new environmental programs during a five-day conference attended by approximately 1,000 delegates. The hotel compared the new data with data from a similar convention held the previous year and found a 34% reduction in waste generated (Bluegreen Meetings, 2004). For the IAIA '04 we can expect less waste due to hotel recycling of glass, paper and aluminum. The Sheraton Wall has recycled materials in the manufacture of their interior finish products, and many other “green features”, effectively mitigating the amount of waste generated and land filled.

### **Frequency/Duration**

The IAIA '04 is a four-day conference. Training and technical visits are scheduled over the two days prior to the start of the actual conference and for two days immediately after. Although the duration of the activity is short, 800 people will be participating in mainly on-site activities for at least four days. Eating and drinking, bathing and grooming generate garbage in the form of packaging, leftover food, containers, batteries and paper.

We can expect an increase in garbage at this time directly resulting from this conference, in contrast to amounts of garbage produced by regular travelers who do not spend as much of their time at the hotel. The increase in garbage, however, results in an impact of negligible size and duration.

### **Reversibility**

The City of Vancouver has a strong commitment to sustainability and has implemented measures to reverse and mitigate impacts from waste.

Landfill gas is a product of anaerobic decomposition of organic waste deposited at landfills. It is comprised of 50% carbon dioxide (CO<sub>2</sub>) and 50% methane. The latter is a potent greenhouse gas (GHG) and has 21 times the warming potential of CO<sub>2</sub>. (Landfill Gas Industry Alliance, 2004) The City of Vancouver has pursued a project to put landfill gas to beneficial use. Vancouver has been collecting landfill gas and flaring since 1991. The collection and flaring system was installed primarily to control odors. A portion of the gas collection is used to heat and provide hot water for the landfill administration building (City of Vancouver, 2004).

Maxim Energy Group Ltd. plans to generate electricity from landfill gas for sale to B.C. Hydro. Consequently, emissions from the landfill are reduced and green power is generated, offsetting the need to consume fossil fuels to provide an equivalent amount of energy. A similar project in Nanaimo reduced GHG by 30,000 tonnes per year of CO<sub>2</sub>

equivalent; the amount produced by approximately 6,000 automobiles per year (Maxim Energy Corp., 2004).

The City of Vancouver has other progressive programs and initiatives that support the reduction of emissions during the management of solid waste. Some of these include corporate waste disposal initiatives such as recycling transfer stations (including battery, mattress, tires, scrap metal and appliance recycling) and a garbage/recycling hotline.

These initiatives work to reverse and mitigate the effects of garbage production.

### **Ecological Context**

Landfill gas is produced by decomposing organic material and can lead to greenhouse gas emissions and odors unless properly managed. The garbage generated by the IAIA conference, however, is minimal and is effectively managed through hotel and landfill projects.

### **Mitigation Measures**

There are several ways that garbage can be further reduced at the IAIA '04.

- Ask delegates to sign up for meals, indicate what meals they will be attending and pre-select meal sizes
- Ask that leftovers be donated to a local shelter or soup kitchen
- Re-use signage for future events
- Encourage participants to make use of optional linen replacement and recycling bins.

## **Impact Assessment Profile: Carbon Dioxide Emissions**

### **Nature of the Impact**

Anthropogenic carbon dioxide is thought to be partially responsible for global warming, and as such, international efforts have been aimed at reducing these emissions. Emissions are largely the result of the combustion of fossil fuels and in 1990, approximately one quarter of the fossil fuels burned worldwide were attributed to the transportation sector as a whole (Lee *et al.*, 2001). The aviation industry specifically was responsible for 2% of the total anthropogenic carbon dioxide emissions, or 13% of the transportation emissions (IPCC, 1999).

### **Extent**

The extent of the carbon dioxide emissions from the IAIA conference in Vancouver can be viewed at two scales. In traveling to the conference the extent of the impact is global, given that the primary mode of transportation is aircraft. The participants are traveling from a number of locations worldwide, and the emissions from this travel are unconstrained in their distribution. During the conference itself, the extent of the impact is largely concentrated in the Fraser Valley airshed. Site visits as well as travel to and

from the conference is generally located in the Greater Vancouver Regional District (GVRD), therefore fuel burn and the associated emissions will immediately impact this area.

### **Magnitude**

The magnitude of the impact of carbon dioxide emissions from this conference is proportionally related to the fuel consumed for transportation purposes (Green, 2003). As the extent of the impact is twofold, the magnitude of the impact must be assessed at these scales as well. In the case of the air travel required to attend the conference, approximately 4.8L of fuel per passenger per 100km is consumed (IPCC, 1999). Evidently this will vary with factors such as load factor, weather, aircraft and engine characteristics. To translate this into CO<sub>2</sub> emissions, approximately 0.134kg CO<sub>2</sub> per passenger km will be produced by an average aircraft during flight (SAS, 2004).

During the conference itself, emissions will be created by travel to and from the conference, as well as travel to and from the sites chosen for site visits. Site visit transportation is primarily in the form of buses, although ferries and public transit are also used. Diesel buses emit approximately 0.44kg/km of CO<sub>2</sub>, while natural gas buses emit slightly less (Romilly, 1999). As such, emissions for the site visits to Delta, Richmond (Vancouver International Airport), Stave Falls and Robert's Bank will produce at least 52 kg of CO<sub>2</sub>. This does not include transportation to and from the airport nor the site visits to Howe Sound, Esquimalt, the Sea-to-Sky Highway, nor any travel by individual participants during the conference.

### **Frequency/Duration**

The CO<sub>2</sub> created by transportation associated with the conference will likely be concentrated between April 24 and 30, 2004, although there may be additional travel by participants before the 24<sup>th</sup> and after the 30<sup>th</sup>.

### **Reversibility**

The reversibility of carbon dioxide emissions is largely unknown. However, CO<sub>2</sub> remains in the atmosphere for 50-100 years (Green, 2003). This suggests that reversing the impact of the conference in terms of CO<sub>2</sub> emissions would be difficult.

### **Ecological Context**

Approximately 7Gt CO<sub>2</sub> were emitted in 1992 from all sources, and 1.1Gt CO<sub>2</sub> from transportation sources globally (IPCC, 1999). If travel by participants averages 3000 km each<sup>2</sup>, approximately 755,200 kg of CO<sub>2</sub> can be attributed to travel to and from the

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<sup>2</sup> 3000km is the approximate distance between Toronto International Airport (YYZ) and Vancouver International Airport (YVR). It is also the approximate distance between Chicago O'Hare International Airport (ORD) and Vancouver International Airport. Both YYZ and ORD are major hubs in international aviation and as such, it is likely that a large proportion of the conference participants will connect through, or depart from these airports.

In addition, based on conference attendance lists from the past two years, it seems safe to assume that the majority of participants will be from North America. This follows from the fact that when the conference was held in The Hague 57% of the participants were from Europe, and when the conference was held in Morocco, the 33% of participants were from Africa. The breakdown of participants at past conferences is provided in Appendix A.



conference. As such, while CO<sub>2</sub> emissions due to conference associate travel are not insignificant, they do not contribute substantially to global emissions.

15,923,087 metric tonnes of CO<sub>2</sub> are emitted annually in the GVRD, 25% of which are from light cars and trucks, 22% of which are from space heating (Greater Vancouver Regional District, 2002). As such, the minimum emission of 52kg CO<sub>2</sub> during the conference may be insignificant.

### **Mitigation/Alternatives**

Mitigation for the CO<sub>2</sub> emissions created by the conference could take a number of forms, including:

- Encouraging participants to use public transit or the Airporter shuttle bus upon arrival in Vancouver for transportation to the hotel.
- Providing each participant with a backpack and a map showing potential walking routes around the hotel. Tickets for the local public transit system could also be included.
- Buying Green Power certificates from the Pembina Institute to offset the CO<sub>2</sub> emissions created by the conference.
- Supporting local environmental groups, especially those concerned with climate change.

## **Impact Assessment Profile: Water Use**

### **Nature of the Impact**

The IAIA's Vancouver conference has two primary impacts on water resources: provision of freshwater, and disposal of wastewater. Due to Vancouver's typically high reservoir levels during this time of year, the impact of freshwater provision will be minimal; thus this assessment primarily focuses on wastewater disposal. Such disposal may impact the environment in many different ways. Human health may be impacted by the release of toxins, hormones, and other chemicals into the ambient water supply, resulting in potential re-ingestion. Ecological health may be influenced by excessive BOD loading, eutrophication, and pathogen release, resulting in alteration of the local species composition. Finally, wastewater production may result in more anthropocentric concerns, such as aesthetic impacts.

### **Extent**

Wastewater produced by the conference and its guests will be treated at the GVRD's Iona Island Wastewater Treatment Plant (WWTP). This plant discharges an average of 617 ML of wastewater per day into Georgia Strait (GVRD, 2001). Iona's twin outfall is located 7.2 km from shore at a depth ranging from 72m to 106 m, and has been shown to impact sediment composition and benthic communities up to 9.2 km from the outfall site (GVRD, 2001).

## **Magnitude**

The Conference's freshwater needs are assumed to be equal to its predicted wastewater output. According to the ADEC (2000), hotel guests produce 50.1 gallons (or 190 L) of wastewater per person per day. Thus, with a predicted 800 attendees, the conference is expected to demand 1,064,000 L of fresh water over its 7-day duration.

The Iona WWTP currently provides primary treatment to its raw sewage before discharge. Such treatment only removes 30-40% of its Biological Oxygen Demand (BOD), and 50% of its Total Suspended Solids (TSS) (GVRD, 2004). Accordingly, in 2003, Iona discharged effluent with 80 mg/L BOD and 53 mg/L TSS (GVRD, 2004). At similar discharge concentrations, the conference would produce 85.12 kg of BOD and 56.40 kg TSS.

## **Frequency/Duration**

The impacts of this conference on freshwater production and wastewater treatment on Vancouver's environment would only occur once, lasting for 7 days.<sup>3</sup>

## **Reversibility**

As the conference is scheduled to occur at the end of April, when reservoir storage levels are still close to their peak, the impact of its freshwater demand is expected to be low and easily reversible.

Due to Georgia Straight's natural flushing and wide dispersive qualities, the conference's wastewater impacts are expected to be easily reversible.

## **Ecological Context**

The ecological impacts of this conference are primarily limited to the marine ecosystems surrounding the Iona WWTP's sewage outfall. While studies have shown that both marine and benthic communities immediately surrounding the outfall are sensitive to effluent quality, the incremental impact of this conference is expected to be minor.

## **Mitigation**

Mitigation measures for water use and wastewater production are difficult to propose as the infrastructure for water use is fixed for any given location. As such, aside from promoting water conservation by conference participants, the following mitigation measures are proposed for future conferences:

- Relocate the conference venue to a location with superior water-saving features. For example, Fairmont's Hotel Vancouver utilizes low-flow plumbing fixtures, optional towel, sheet exchange programs, and low-volume flush toilets.
- When planning future IAIA conferences, consider using hotels that recycle their wastewater. North American Fairmont Hotels will soon implement wastewater recycling programs, reusing 70-80% of their wastewater within the hotel, and using the other 20-30% as greywater for local irrigation needs.

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<sup>3</sup> This assumes that guests do not extend their stay beyond the conference dates.

- The impact of sewage produced from this conference can be mitigated by holding the conference in a Lower Mainland area that directs its raw sewage to a secondary treatment plant, such as in Richmond, Burnaby, or White Rock, whose sewage is treated in either the Annacis Island or Lulu Island Wastewater Treatment Plants (GVRD, 2004). Secondary treatment is able to remove 90% of the wastewater's BOD and TSS, thereby reducing the Conference's BOD by 73.42 kg and TSS by 45.75 kg.

## **Impact Assessment Profile: Paper Use**

### **Nature of Impact**

As will be shown below, the IAIA 2004 conference will contribute to a minimal increase of paper usage in the Canadian market place. This is due to the small "footprint" this conference will contribute to overall paper production in Canada. However, this may be of concern due to the world's increased demand for paper products with the annual average increasing at a rate of 3.2% per year (EPA, 2004).

### **Extent**

The extent of the impact associated with paper use at the IAIA '04 conference is likely interprovincial. It has been assumed that all paper material has been produced from Canadian forest products, particularly wood<sup>4</sup> (CPPA, 2004) and this may have been harvested from provinces across the country.

### **Magnitude**

It has been assumed that each attendee will receive a binder for the conference consisting of 200 pages. Additionally, brochures each attendee will be receiving an estimated 10 informational pamphlets from trade exhibits. It is estimated that there will be 800 attendees at the conference, therefore 800 binders will be required as well as 168,000 pieces of paper will be distributed during the conference.

Approximately two cords of lumber will be required to create the material for this conference<sup>5</sup>, assuming the paper used contains no post-consumer recycled product and the paper is of letterhead bonded quality.

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<sup>4</sup> Wood is the most widely used fiber source for paper and cardboard products accounting for 98% of the virgin fiber used in the paper making process.

<sup>5</sup> According to Bowater Incorporated (2004), one cord of wood yields:

- 7,500,000 toothpicks
- 1,000-2,000 lbs. of paper (depending on the process)
- 942 one lb. books
- 61,370 #10 envelopes (standard)
- 2,700 copies of the average daily paper (35 pages)
- 250 copies of the Sunday New York Times

## **Frequency/Duration**

Paper consumption will be most pronounced between April 24 and 30, 2004. Within this timeframe, technical visits will not likely require a substantial amount of paper therefore use may be the greatest between April 26 and 29, 2004.

## **Reversibility**

The removal of the trees required to create the paper used by the conference is not immediately reversible. The rotation time for forest lands varies; as an example pine trees are generally harvested every 15 years (EPA, 2004). However, it is possible to replant the number of trees required to produce materials for the conference, thereby making the impact ultimately reversible. Additionally, there should be little impact on the local waste management site as nearly 100% of the distributed material should be taken back to the home country of the attendee.

## **Ecological Context**

Canada harvests 1 million hectares of forested land per year, while there are 417 million hectares available for lumber products (CPPA, 2004). Consequently, the overall usage of lumber by the conference will be negligible compared to the annual impact of deforestation in Canada. Additionally, it should be considered that the average Canadian uses 326kg of paper products annually (EPA, 2004).

The daily Vancouver newspapers produce 5,128,200 newspapers every week (Vancouver Sun and The Province, 2004). This constitutes a total of 1,900 cords being used for the newspaper industry alone in Vancouver on a weekly basis. Notably, this does not include corporate or individual paper consumption. As such, the use of 2 cords of wood for conference purposes is comparatively small.

## **Mitigation:**

- Include a question pertaining to ownership of a laptop computer on the registration form. If registrants do have a laptop computer, all published material should be placed on a CD-Rom so that participants can pick up the CD when arriving and have all material readily available on their laptop (this should include all brochures from displays).
- Encourage recycling and reuse of paper products on the part of attendees.
- Seedlings could be planted as a part of the closing sessions to replace the paper products used during the conference<sup>6</sup>. This approach has been used successfully at previous conferences (Bluegreen Meetings, 2004).
- Participants who do not have a laptop computer will require paper based material; a reduction can be achieved through the use of recycled material, which uses 60% less energy than manufacturing paper from virgin timber.

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<sup>6</sup> As these seedlings grow, they will sequester carbon and will therefore assist in mitigating the CO<sub>2</sub> emissions of the conference as well.

## Conclusions and Recommendations

While it is admirable that the IAIA undertake an EIA process to determine the effects of the 2004 conference, it should be noted that according to Ross (2004), the EIA process is most effective before the project has been designed. Evidently, this means that while this EIA process can certainly propose mitigative measures, as well as alternatives for future conferences, the ability of this team to propose measures that could substantially reduce the impact of the conference, such as alternate locations is minimal.

Given the decision to hold the conference at the Sheraton Wall Center Hotel in Vancouver, the team has determined that the impacts of the conference are certainly present and may be of concern if they are viewed cumulatively. It should also be noted that the ecological context is such that the impacts do not seem to be cause for grave concern. Nonetheless, mitigation measures have been proposed for each impact examined.

Based on the findings of this EIA, recommendations of the team for future conferences include:

- Consider holding the conference at a hotel that has been audited by, or is a member of the Green Leaf Program.
- Assess the environmental programs offered by the venue chosen by way of a checklist.<sup>7</sup>
  - Examples of alternatives offered by hotels to reduce their environmental impact include low flow bathroom appliances, food and beverage recycling, use of local produce, organically grown coffee and bulk dispensers for amenities such as shampoo.
- Joint planning between the chosen venue and the organizing committee could allow the IAIA to specify environmentally friendly alternatives, thereby reducing the impact of the conference.

It has also been noted by the team that choosing an environmentally friendly hotel may result in increased cost for the participant, as these hotels generally spend a significant amount of money on ensuring their facilities have minimal environmental impacts. As such, potential attendees with limited resources such as students or independent consultants may not be able to participate, and the conference may not be entirely accessible or equitable. Although equity is not a stated concern of the IAIA, the team encourages the IAIA to take this into consideration when planning future conferences.

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<sup>7</sup> This checklist can be developed internally or from a reputable source such as [www.bluegreenmeetings.com](http://www.bluegreenmeetings.com).

## **Appendix A: Regional Participation at the 2002 and 2003 IAIA Conferences**

Table 1: Breakdown of Participants at the 2003 IAIA Conference

<b>Region</b>	<b>Delegates</b>	<b>Percent</b>
Africa	133	33%
Europe	119	29%
North America	103	25%
Asia	41	10%
Australia & Oceania	12	3%
South America	1	0%
<b>Total</b>	<b>409</b>	<b>100%</b>

Table 2: Breakdown of Participants at the 2002 IAIA Conference

<b>Region</b>	<b>Participants</b>	<b>Percent</b>
Europe	352	57%
North America	113	18%
Asia	60	10%
Africa	47	8%
Australia & Oceania	26	4%
South America	16	3%
<b>Total</b>	<b>614</b>	<b>100%</b>

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