



DEVELOPMENT OF A  
HEALTH-BASED AIR QUALITY INDEX  
FOR CANADA

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## EXECUTIVE SUMMARY





## EXECUTIVE SUMMARY

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### Background

Air pollutants such as ozone, particulate matter, nitrogen dioxide, sulphur dioxide and carbon monoxide have been clearly linked to a variety of health effects, including premature mortality, asthma, bronchitis, increased respiratory distress symptoms and other adverse end points. Certain populations are especially vulnerable to adverse health effects, including children, the elderly, and those with pre-existing cardio-respiratory disease. Individuals who exercise or do strenuous activities outdoors are also susceptible to the negative effects of air pollution.

Canadians currently rely on an air quality index (AQI) to inform them on a daily basis about air pollution conditions in their community. At this point in time, there is no common AQI used across the country: Provinces and some municipalities have developed and implemented their own versions, supported by the federal government providing scientific, monitoring and other technical assistance in the form of air quality forecasts. While these different AQIs share common features (e.g. colour and word scales), there is a notable lack of consistency in the way in which air quality is calculated and reported, as well as in the use of health-based messages.

A process was initiated in June 2001 to improve the state of Canadian AQIs, with the principal objective of making them more reflective of human health concerns. The federal government has a long history of involvement in the AQI and is currently facilitating the process to develop a national health risk-based AQI in partnership with provinces and other jurisdictions who issue an air quality index across Canada, as well as other stakeholders. Health Canada's Air Health Effects Division in the Healthy Environments and Consumer Safety Branch, in partnership with Environment Canada's Meteorological Service, is undertaking outreach

and health promotion activities to support the AQI stakeholder process.

To support this initiative, Health Canada identified the need to better understand Canadians' attitudes and experiences with respect to a number of central issues related to the AQI, including Canadians' level of familiarity with, and use of, the index; preferences with respect to the format of air quality messages; and how the public does or does not respond when confronted with an air quality warning. Improved understanding of these issues is intended to guide Health Canada and its partners and stakeholders in developing the most effective communications on air quality possible, as well as provide insights into how to frame a social marketing campaign designed to get Canadians to change their behaviours during smog events so that adverse health effects are minimized.

### The research

To address this information requirement, Health Canada commissioned the Environics Research Group to conduct public opinion research to gauge Canadians' awareness, perceptions and behavioural responses to air quality, air pollution and the AQI. The findings from this research will be used to guide the development of health messages to effectively communicate the AQI to Canadians with respect to the health risks associated with poor air quality, as well as promote actions that will protect their health and the environment. This current work builds on previous studies conducted by Health Canada and Environment Canada over the past decade.

The study consists of quantitative and qualitative research that was conducted in three phases between July 2004 and March 2005:

i. **Post-Air Quality Event Surveys.** Telephone surveys were conducted with residents of three urban areas (Greater Toronto Area, Montreal Island, Lower Fraser Valley, B.C.), in each case immediately following a poor air quality episode. This research measured the public's awareness and response to such events, as well as residents' general awareness and use of AQIs.

Following the post-event surveys in B.C. and Toronto, a separate "mental models" research project was undertaken by the Decisionanalysis Risk Consultants, Inc. to more fully map out the general public's perceptions and misperceptions around air quality and health. This work consisted of in-depth qualitative interviews with 28 individuals recruited from the general population, including some who are "at risk" in terms of health problems linked to poor air quality. The results of this analysis guided the development of the subsequent phase (Autumn 2004 National Survey), through which the findings of the mental model work were validated across the full population.

ii. **Autumn 2004 National Survey.** A comprehensive national telephone survey was conducted following the summer 2004 "smog season" with a representative sample of Canadians in areas currently served by AQIs. This research focused broadly on the public's awareness, perceptions and behaviours as they relate to air quality, air pollution and the AQI, with a particular focus on the relationship between air quality and health.

The results from the first two phases of this research were presented at a Health Canada-sponsored workshop on December 2-3, 2004, which brought together a wide range of professionals from the public and promotional health and environmental communities specializing in air issues in Canada. The purpose of this workshop was to use the new findings, as well as participants' recent research and experience, to guide the development of new health messages for testing in the phase 3 research.

iii. **Qualitative Assessment of new AQI communications concepts.** Focus groups were held with residents in six communities across the country to test public reaction to new AQI communications concepts (e.g. messages, graphics, category labels) that were developed according to the findings from the previous phases of this initiative.

## Conclusions

The first two phases of this research reveal that Canadians widely identify air pollution as a significant environmental problem in their communities today, and recognize that it represents a clear hazard to human health. At the same time, there is a strong tendency for individuals to dissociate these risks from themselves, either by underestimating their own exposure or assuming the risks apply primarily to other types of people who they believe are most at risk (e.g. the elderly). Most Canadians know that AQIs or advisories are provided in their area, but this information is having a limited impact in terms of attracting attention and prompting actions to reduce personal exposure, even during significant poor air quality events.

The results of the third phase of research clearly demonstrate the potential for a new type of national Air Quality Index in Canada that effectively conveys important information to the general public on air quality conditions and their significance, and specifically health-related messaging on impacts and what people can do to reduce their exposure. The key features of this new concept include a "0" to "10" point unbounded scale (including both a colour gradient from blue to grey and word labels) showing current air quality conditions, a forecast of future conditions, and standardized information at each level covering health risks, targeted information for groups most at risk, and recommended activities (e.g. when it is safer to engage in strenuous outdoor exercise).

The new AQI communications concepts tested received a strong positive response from all groups with which they were tested, regardless of individuals' own degree of involvement with air quality issues and its impact on their health. Canadians who are sensitized to this issue were most likely to see the new AQI information as valuable for their own use, while those less concerned see this as something important for other people who they think might be at risk. The degree of interest expressed in this new index provides evidence that it would be more effective than the current versions in attracting public attention and prompting health-protective behaviour.

This positive assessment stems from design innovations built into the new AQI concepts based on the previous phases of the research. For instance, the new 10-point scale for overall air quality proved to be intuitively obvious to almost everyone, suggesting it may be more accurately interpreted than what appears to be the case with the current AQIs (based on the results from the first two phases of this study). This was also the case in terms of the colour gradient, which is based on environmental conditions (sky blue to gritty grey) rather than the spotlight imagery (green-yellow-red) of the current index. Additional information provided, such as forecasted conditions and groups at risk, were widely viewed as relevant and useful in a practical way. For instance, some individuals volunteered that knowing the air quality forecast would prompt them to reschedule activities that might result in heightened exposure to poor air quality conditions.

The AQI concepts tested are clearly promising, but will require further development and testing before being launched on a full-scale basis. Pilot tests are scheduled to take place in New Brunswick and British Columbia in the summer of 2005, which will provide an opportunity to confirm the positive public reception found in the qualitative research, and most importantly, to gauge whether the new index proves more effective than the current ones in attracting attention and prompting appropriate self-protective actions.

Implementation of a new nationally-consistent AQI based on the concepts tested through this research will support Health Canada's goal of better informing Canadians about the health risks associated with poor air quality and prompting health-protective actions. But it would be unrealistic to expect substantial progress over the short term, because the issues around public perceptions and response to poor air quality are embedded in firmly entrenched patterns of human cognition.

The research reveals that the principal challenge to Health Canada's objective involves the dynamics around how individuals perceive air quality, air pollution, and its relation to their own health. The primary reason why Canadians are not more responsive to air quality warnings is less about a poorly-designed AQI, and more about individuals' dissociating the reality of air pollution hazards from their own personal circumstances, except in those cases where people are con-

fronted with compelling evidence of health symptoms or problems they can clearly link to poor air quality.

This pattern can be explained in part by the tendency for individuals to rely on their own senses (primarily visual) rather than public advisories to detect poor air quality, a tendency which allows people to determine that conditions are better than they are in reality. If they cannot see pollution in the sky or feel any noticeable health symptoms that they can tie directly to air quality, it is then easy to conclude that conditions do not warrant further attention; air quality advisories become of secondary importance as something that applies to other types of people who they believe may be more at risk. When Montreal experienced its worst-ever air quality episode in February (a rare winter event that prompted major media attention), 60 percent of the population noticed, but only one-quarter of this group reported that anyone in their household did anything different as a result.

Another way in which people may respond to the knowledge about air pollution and health is to conclude that there is nothing they can do about it. This response is most evident among Canadians who are informed enough to know that air pollution is hazardous but at the same time are not experiencing any clear symptoms that link to their own health and well-being. Air pollution becomes one of many lamentable but ultimately accepted risks that are part of life in the 21st century.

These patterns of human perception and behaviour are deeply ingrained, which means that getting Canadians to pay more attention to air quality from a health perspective will require more than the introduction of a new Air Quality Index. What is required is a more comprehensive initiative of social change similar to what has taken place with the public's orientation around the use of tobacco products. Making progress will require both a more effective air quality information system and a sustained program of social marketing/education to reframe how people think about and respond to air quality issues.

The focus of such efforts might be directed in such areas as more firmly establishing a public understanding that: a) external reports (e.g. advisories) provide the only accurate way to know when the air is bad;

and b) air pollution affects everyone's health, even at low levels. The successful introduction of weather-related indices and messaging around UV radiation and wind chill conditions provide hopeful examples of how progress is possible in building a more health-oriented public response to air quality.

## Key research highlights

The following provides key highlights from each of the three phases of this study.

**I. Post-Air Quality Event Surveys.** The results of this research reveal that advisories issued during poor air quality events in the Fraser Valley B.C., Greater Toronto Area, and Montreal Island over the past year, have had a modest impact on local residents, in terms of attracting attention and prompting actions to reduce personal exposure. The reality of poor air quality and its impact on health is widely acknowledged, but not sufficiently salient to motivate a majority of the population in these communities (and likely others across Canada) to take it seriously.

- Recall of the air quality advisory issued over the previous few days was not particularly high, although residents in Montreal (60%) and the Fraser Valley (54%) were more than twice as likely to notice it as were those living in the Greater Toronto Area (25%). This difference may be due to the fact that air quality is generally poorer in the GTA, making advisories there more common and so less noticeable when they are issued. In contrast, the Montreal air quality episode was highly unusual for the winter season and as a result generated a tremendous amount of local media coverage that would have contributed to public awareness of the advisory.
- Why more residents did not notice these advisories may be due in part to the fact that Canadians generally rely on their own senses (primarily visual) rather than media forecasts or announcements to determine local air quality conditions. And reliance on sensory cues appears to have been of limited value during these episodes, as most residents did not perceive local air quality conditions at the time to be substantially different than what they consider to be normal conditions. This finding is particularly striking in the case of the Montreal episode, during

which AQI readings of 100 plus were the highest ever recorded in winter.

- The research indicates that most residents absorbed little more from the advisory than the fact that air quality in their area was not good. Few could recall without prompting anything about potential health risks, the types of people most at risk, ways to reduce exposure or the specific AQI reading for the day. This may be because such messages are not being effectively broadcast, people are not paying enough attention to hear them, or what was heard was not successfully retained in a meaningful way.
- An appropriate behavioural response to the identified air quality advisory was limited to only a portion of the area population. Among those who could recall hearing or seeing something about the recent advisory, well below half of GTA (42%) and Fraser Valley (30%) residents say they or someone in their household did anything differently because of it; this figure was lowest of all in Montreal (23%) where conditions were actually the worst. Moreover, such efforts were largely limited to one type of action, most commonly to spend less time outdoors or to close windows.
- In all three communities, people give two principal reasons for not doing anything differently in response to the recent poor air quality episode in their area. Some denied the need to act because they themselves were not at risk from the ambient air quality at the time, either because it was not affecting their health or because they did not believe the current air quality level constituted any hazard. Others were more fatalistic, expressing the view that it was not possible to do anything about the poor air quality episode, either because they were not able to alter their routine at the time, or because they felt there is simply no way to avoid breathing bad air.
- Majorities of residents in the Fraser Valley and GTA communities have some familiarity with the local AQI, with such awareness noticeably lower in Montreal. But this information does not appear to be closely followed by most in any of these communities, as no more than one in four residents say they look for AQI information during summer months on a regular basis. Across AQI formats, residents



are most likely to rely on the word scale, possibly because it may offer the most intuitively obvious way for most people to make sense of differing levels of air quality. Terms like “good” or “poor” fit more easily into people’s current “mental model” of air quality, than a “stoplight” colour or number.

II. Autumn 2004 National Survey. The results of this study confirm that most Canadians understand at a general level that air pollution is a major environmental and health issue, and a majority have a basic awareness of air quality information provided in their area, in the form of an AQI or advisories. At the same time, the public has a limited and somewhat inaccurate understanding of air pollution and its impact on health, and tend to rely much more on what they can see and smell rather than published air quality information to determine when local conditions are bad and require protective actions.

- At a general level, air pollution is widely recognized as a major environmental hazard, and one that evokes concern. Two-thirds of Canadians say they are very concerned about the quality of air, comparable to the level of concern about water quality and toxic chemicals in the environment, and above that expressed for such issues as climate change and depletion of the ozone layer. At the same time, the public is no more concerned about air quality than they were in 2001, and this issue appears to be one to which people have become acclimatized as a fact of life in the 21st century.
- Most Canadians think of air pollution in relatively narrow terms, as being largely localized and coming chiefly from vehicle and factory/industry emissions. This conception of air pollution as being localized around specific sources leads many to assume that air quality is invariably better in the suburbs than in the downtown core, and that it is better still in the country. Moreover, there appears to be confusion between the pollutant ground level ozone and the ozone layer in the stratosphere.
- Canadians rely primarily on their own sensory cues (what they can see, smell or tell from their own health symptoms) rather than media advisories, to detect air pollution conditions. This pattern is further confirmed by the finding that most Canadians say they can identify poor air quality as soon as they step outdoors. This reliance on sensory cues appears to be a significant factor in the lack of greater reliance on published AQI and advisories.
- Most Canadians acknowledge that air pollution has a significant impact on human health, largely seen in terms of asthma and other forms of respiratory illness. At the same time, people tend to think about air pollution as having longer term rather than acute impacts on health, in large part because this is how respiratory illness tends to be viewed, and also in the absence of having knowledge of direct evidence of significant acute impacts (e.g. deaths, heart attacks).
- Despite acknowledging the health risks of air pollution, Canadians tend to downplay the extent to which it affects them directly, a pattern that is evident even among those living in major urban centres. Although almost three in ten report that they or someone in their household has experienced some type of health impact from air pollution in the past two years (mostly in the form of asthma or other respiratory problem), few in this group consider local air pollution to represent a serious hazard. This suggests that people view air pollution more as an aggravating factor to preexisting problems than a major cause of illness. Few believe that healthy people (like themselves) are at risk from air pollution because of where they live or through strenuous activity during air quality episodes.
- The limited assessment of personal risk from local air pollution may be due in part to the fact that Canadians do not believe there is much they can easily do to reduce such risks. At present, there is no widespread understanding of the appropriate protective actions to be taken when poor air pollution hits. Perceptions about the localized nature of air pollution leads many to believe that getting away from urban areas or avoiding high traffic areas will be effective in reducing personal exposure. Relatively few seem to understand that the most effective actions most people can take involve staying indoors or avoiding strenuous exercise.

- Canadians tend to assume that air pollution starts to affect health once their local AQI drops below the most positive point on the scale (e.g. from “good” to “fair”). This suggests that people may either be drawing a threshold for health impacts, or assuming that the highest level on the scale indicates the absence of any pollutants. When the focus is placed on when they should take action to protect their own health, there is a decided shift down at least one point on the scale (e.g. from “fair” to “poor”). This pattern is evident across jurisdictions and scale formats, but less pronounced with the colour scales, suggesting that the middle points on these scales (ie. orange, yellow) connote something more negative in comparison to the middle points on the word and numeric scales.
- Canadians say they would like to receive more information about local air quality and pollution, but this appears to be a somewhat unfocused type of interest, as no specific type of information emerges as a clear priority. People may simply have not had enough experience with such information, nor given sufficient thought to what might be of greatest value to them, to allow them to understand their own needs in a meaningful way.

III. Qualitative Assessment of new AQI communications concepts. The communications concepts for a new AQI were very favourably received by all of the focus group participants with whom it was tested, and the health-based messaging was broadly seen as valuable and useful information. A new index based on these concepts has the potential to be as effective in influencing people’s daily behaviour as other published environmental advisories that include health messaging, such as the current indices for UV radiation and wind chill.

- The communications concepts were favourably received regardless of participants’ degree of sensitization to air quality issues. However, the level of interest and acceptance was more positive among those more sensitized, who perceived the index as a useful tool and guide for their own use. Those less sensitized to air quality were more inclined to see the proposed information as particularly useful for other people with related health problems such as asthma.
- Each of the elements in the content and design of the new AQI met with positive reactions in general. Although a few participants took issue with individual elements, words or phrases in the materials presented, such criticism was minor in the context of the overall positive endorsement of the new concepts.
- Participants readily understood the air quality scale as an index depicting the level of air quality or air pollution. This was apparent even in the greyscale version, although the colour version was particularly effective in communicating a spectrum of air quality ranging from low health risk (characterized by a pale blue sky) to high health risk (from brown to grey). Participants also easily made sense of the scale going beyond 10 in extreme circumstances (signifying a very high health risk), and found it appropriate that the colour changes to red (for warning) at this point.
- The forecast information contained in the index (depicted as graphic arrows and additional text) was generally understood and considered to be valuable. Sensitized participants were more likely than others to indicate that they would use this information to plan their day.
- Simple, unambiguous and non-alarmist words and phrases were strongly preferred for the Category Labels (e.g., to describe the ranges 0-3, 4-6, 7-10 and 10+). The most effective and popular terms were those such as “low,” “moderate,” “high,” and “very high health risk.”
- The health risk messages that resonated best with participants were those addressing specific target groups, such as children, the elderly, and those with asthma and other ailments, as well as those providing cautionary advice and which were concise. There was a broad acceptance of having separate health risk messages for the general population and those with health risks, as well as for inclusion of the recommendations to seek a doctor’s advice.
- The inclusion of general information about air quality and health was also valued by most participants, although some expressed scepticism about a possible political agenda to this part of the index. At the

same time, it is clear that many do not understand technical terms such as “ozone” and “atmospheric transport,” suggesting such terms should be avoided where possible.

- Through both unaided (brainstorming) and aided (a list of possible names) techniques, participants were encouraged to suggest the most appropriate name for the new Air Quality Index. Overall, the clear preference was for the currently-used term “Air Quality Index” in the English focus group sessions, and the French equivalent “L’indice de la qualité de

l’air” in the French sessions. The terms “Air Health Index” and “Air and Health Index” were also viewed as acceptable choices.

- Apart from the content of the concepts tested, the design and layout of the new AQI also worked very effectively. Participants gave positive reviews to the various design elements, including the air quality scale (e.g., intuitively simple to grasp), large numerals that make it easy to find the day’s air quality reading, and the effective presentation of considerable information in a compact space.





## RÉSUMÉ

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### Renseignements généraux

Des polluants atmosphériques tels que l'ozone, les matières particulaires, le dioxyde d'azote, l'anhydride sulfureux et le monoxyde de carbone ont été clairement associés à une gamme d'effets sur la santé, y compris le décès prématuré, l'asthme, les bronchites, un accroissement des symptômes de détresse respiratoire et d'autres effets nocifs. Certaines populations sont tout particulièrement vulnérables aux effets nocifs sur la santé de la pollution de l'air.

Les Canadiens comptent aujourd'hui sur l'indice de la qualité de l'air (IQA) pour se tenir au courant des conditions relatives à la pollution atmosphérique dans leur collectivité. À l'heure actuelle, il n'existe pas d'IQA commun pour l'ensemble du pays : les provinces et certaines municipalités ont développé et mis en place leurs propres versions, avec l'aide du gouvernement fédéral qui offre du soutien scientifique, de surveillance et autre soutien technique sous forme des prévisions de la qualité de l'air. Alors que ces versions différentes de l'IQA présentent des caractéristiques communes (p.ex. échelles de couleurs et de mots), il existe un manque de cohérence apparent dans la façon de calculer et de présenter des rapports sur la qualité de l'air, ainsi que dans l'utilisation des messages relatifs à la santé.

Une démarche a été entreprise en juin 2001 pour améliorer la situation relative aux IQA canadiens, dont l'objectif principal est qu'ils en viennent à correspondre davantage aux préoccupations relatives à la santé humaine. Le gouvernement fédéral est engagé depuis longtemps au chapitre de l'IQA et, à l'heure actuelle, il facilite la démarche d'élaboration d'un IQA national fondé sur des critères liés à la santé, en partenariat avec les provinces et d'autres autorités qui diffusent un indice de la qualité de l'air au Canada, de même qu'avec d'autres intervenants. La Division des effets de la pollution de l'air sur la santé de la Direction générale de la santé environnementale et de la sécurité des consommateurs de Santé Canada, de concert avec le

Service météorologique d'Environnement Canada, met en œuvre des activités de diffusion et de promotion de la santé, afin de soutenir la démarche des intervenants dans le dossier de l'IQA.

Pour soutenir cette initiative, Santé Canada a identifié le besoin de mieux comprendre les attitudes et les expériences de Canadiens à l'égard de bon nombre de questions clés relatives à l'IQA, y compris le niveau de familiarité des Canadiens à ce sujet et l'utilisation faite de l'indice; les préférences en termes du format des messages sur la qualité de l'air; ainsi que la façon dont la population réagit ou non à un avertissement sur la qualité de l'air. Une meilleure compréhension de ces questions vise à guider Santé Canada, ses partenaires, ainsi que les intervenants à élaborer les meilleures communications possibles en matière de qualité de l'air, de même qu'à donner une idée sur la façon d'encadrer une campagne de marketing social conçue pour inciter les Canadiens à modifier leurs comportements en période de smog afin que de réduire au minimum les effets nocifs sur la santé.

### La recherche

Pour répondre à ce besoin d'information, Santé Canada a chargé Environics Research Group de réaliser une recherche sur l'opinion publique visant à mesurer la sensibilisation, les perceptions et les comportements des Canadiens à l'égard de la qualité de l'air, de la pollution de l'air et de l'IQA. Les résultats de cette recherche serviront à guider l'élaboration de messages sur la santé afin de communiquer efficacement l'IQA aux Canadiens en termes des risques pour la santé liés à une mauvaise qualité de l'air, ainsi qu'à encourager des gestes qui protégeront leur santé et l'environnement. Les travaux en cours s'appuient sur des études antérieures réalisées par Santé Canada et Environnement Canada au cours des dix dernières années.

La recherche comprend des travaux de recherche quantitative et qualitative qui ont été réalisés en trois étapes entre juillet 2004 et mars 2005 :

i. **Sondages post-événement de qualité de l'air.** Des sondages téléphoniques ont été effectués auprès de résidents de trois centres urbains (région du Grand Toronto, l'île de Montréal et les basses terres du Fraser, en C.-B.), dans chaque cas immédiatement après une épisode de mauvaise qualité de l'air. Cette recherche a mesuré la sensibilisation et la réaction de la population à de tels événements, de même que le niveau général de sensibilisation des résidents à l'égard de l'IQA et l'utilisation qu'ils en font.

À la suite des sondages post-événement en C.-B. et à Toronto, un projet de recherche distinct sur les « modèles mentaux » a été entrepris par la société Decisionalysis Risk Consultants, Inc. afin de tracer plus complètement les perceptions justes et erronées du grand public au sujet de la qualité de l'air et de la santé. Ces travaux comprenaient des entrevues qualitatives en profondeur avec 28 personnes recrutées au sein de la population en général, y compris des personnes « à risque » en termes de problèmes de santé liés à une mauvaise qualité de l'air. Les résultats de cette analyse ont guidé l'élaboration de l'étape suivante (Sondage national de l'automne 2004) qui a permis de valider auprès de l'ensemble de la population les résultats des travaux réalisés sur le modèle mental.

ii. **Sondage national de l'automne 2004.** Un sondage national complet par téléphone a été réalisé après la « saison du smog » de l'été 2004 auprès d'un échantillon représentatif de Canadiens dans des régions desservies présentement par l'IQA. Cette recherche était centrée principalement sur la sensibilisation, les perceptions et les comportements du public en matière de qualité de l'air, de pollution de l'air et de l'IQA, avec une attention particulière accordée à la relation entre qualité de l'air et santé.

Les résultats des deux premières étapes de ces travaux de recherche ont été présentés lors d'un atelier commandité par Santé Canada les 2 et 3 décembre 2004 qui réunissait une vaste gamme de professionnels provenant du grand public et des milieux de la promotion de la santé et de l'environnement spécialisés dans les questions relatives à la qualité de l'air au Canada. L'objectif

de cet atelier était d'utiliser les nouveaux résultats, de même que les récents travaux de recherche et les expériences des participants, afin de guider l'élaboration de nouveaux messages sur la santé à valider au cours de la troisième étape de la recherche.

iii. **Évaluation qualitative de nouveaux concepts de communications au sujet de l'IQA.** Des séances de groupe de discussion ont été réalisées avec des résidents provenant de six collectivités réparties au pays afin de mesurer la réaction du public aux nouveaux concepts de communications au sujet de l'IQA (p.ex. messages, graphiques, catalogage des catégories) qui ont été élaborés à partir des résultats des étapes précédentes de cette initiative.

## Conclusions

Les deux premières étapes de cette recherche révèlent que les Canadiens identifient communément la pollution de l'air comme étant un grave problème environnemental dans leur collectivité d'aujourd'hui et qu'ils reconnaissent que cela pose nettement un risque pour la santé humaine. Parallèlement, les individus ont fortement tendance à se dissocier de ces risques, soit en sous-estimant leur propre niveau d'exposition ou en prenant pour acquis que ces risques touchent surtout d'autres types de personnes théoriquement les plus à risque (p.ex. les personnes âgées). La plupart des Canadiens savent que l'IQA ou des avertissements sont fournis dans leur région, mais cette information a une faible incidence en terme d'attirer l'attention et de susciter des gestes destinés à réduire le niveau d'exposition personnelle même au cours de longs épisodes de mauvaise qualité de l'air.

Les résultats de la troisième étape de la recherche démontrent clairement les potentialités qui s'offrent pour un nouveau type d'Indice national sur la qualité de l'air au Canada. Cet indice communique efficacement de l'information importante au grand public sur les conditions en matière de qualité de l'air et ce qu'elles signifient et, en particulier, des messages sur la santé au sujet des répercussions et de ce que les gens peuvent faire pour réduire leur exposition. Les caractéristiques clés de ce nouveau concept comprennent une échelle illimitée variant de « 0 » à « 10 » (comprenant à la fois un gradient de couleur variant du bleu au gris et des catégories) montrant l'état actuel de la qualité de

l'air, une prévision des conditions futures, ainsi que de l'information normalisée à chaque niveau qui couvre les risques pour la santé, l'information ciblant les groupes les plus à risque, ainsi que les activités recommandées (p.ex. lorsqu'il vaut mieux s'abstenir de faire de l'exercice vigoureux à l'extérieur).

Les nouveaux concepts de communications relatifs à l'IQA mis à l'épreuve ont suscité une réponse fortement positive chez tous les groupes auxquels ils ont été présentés, quel que soit le degré d'engagement personnel des individus face aux questions relatives à la qualité de l'air et à son incidence sur leur santé. Les Canadiens qui sont sensibilisés à ce problème ont tendance à voir les nouveaux renseignements accompagnant l'IQA comme étant utiles à des fins personnelles, alors que ceux moins préoccupés voient cela comme quelque chose d'important pour d'autres personnes vues comme plus à risque. Le degré d'intérêt exprimé à l'égard de ce nouvel indice donne la preuve qu'il serait plus efficace que les versions actuelles pour capter l'attention du public et susciter des comportements destinés à protéger la santé.

Cette évaluation positive provient des innovations en termes de conception qui sont intégrées aux nouveaux concepts de l'IQA fondés sur les étapes antérieures de la recherche. Par exemple, la nouvelle échelle à dix points pour exprimer la qualité de l'air en général s'est avérée intuitivement évidente pour pratiquement tout le monde, ce qui suggère qu'elle pourrait être interprétée avec plus d'exactitude que ce qui semble être le cas avec les versions actuelles de l'IQA (à partir des résultats des deux premières étapes de cette étude). Il en a été de même pour le gradient de couleur qui est fondé sur les conditions atmosphériques (bleu ciel à gris poussière) plutôt que sur l'image des feux de circulation (vert-jaune-rouge) de l'indice actuel. L'information additionnelle qui est présentée, notamment sous forme de prévisions et de groupes à risque, a été largement perçue comme étant pertinente et utile au plan pratique. Par exemple, certains individus ont mentionné spontanément que connaître les prévisions en termes de qualité de l'air pourrait les inciter à modifier la planification d'activités pouvant entraîner une plus grande exposition à une mauvaise qualité de l'air.

Les concepts d'IQA mis à l'essai sont nettement prometteurs, mais ils nécessiteront d'autres raffinements et

mis à l'essai avant d'être introduits à plus grande échelle. Des essais pilote sont prévus au Nouveau-Brunswick et en Colombie-Britannique à l'été 2005, ce qui donnera la possibilité de confirmer l'accueil favorable du public tel qu'observé lors de la recherche qualitative et, ce qui est le plus important, de mesurer si le nouvel indice s'avère plus efficace que les indices utilisés à l'heure actuelle pour capter l'attention et susciter des gestes appropriés pour se protéger soi-même.

La mise en oeuvre d'un nouvel IQA cohérent à l'échelle nationale et fondé sur les principes mesurés au cours de cette recherche appuiera l'objectif de Santé Canada de mieux informer les Canadiens au sujet des risques pour la santé liés à une mauvaise qualité de l'air et de susciter des mesures de protection de la santé. Il serait toutefois irréaliste de s'attendre à observer des progrès importants à court terme, parce que les questions entourant les perceptions et les réactions du public à une mauvaise qualité de l'air sont gravées dans des patrons cognitifs fermement ancrés.

La recherche révèle que le principal problème dans l'atteinte de l'objectif de Santé Canada comprend la dynamique entourant la façon dont les individus perçoivent la qualité de l'air, la pollution de l'air et sa relation avec leur propre santé. La raison principale pour laquelle les Canadiens ne réagissent pas plus aux avertissements sur la qualité de l'air concerne moins un IQA mal conçu, mais davantage le fait que les individus dissocient la réalité des risques liés à la pollution de l'air de leurs circonstances personnelles, sauf lorsqu'il s'agit de personnes présentant des symptômes ou des troubles de santé évidents qu'ils peuvent nettement associer à une mauvaise qualité de l'air.

Ce patron peut s'expliquer en partie par la tendance des individus à se fier à leurs propres sens (surtout la vue) plutôt qu'aux avertissements publics pour détecter la mauvaise qualité de l'air, une tendance qui permet aux gens de déterminer que les conditions sont meilleures qu'elles ne le sont vraiment. S'ils ne peuvent pas voir de pollution dans le ciel ou ressentir quelque symptôme de santé pouvant être lié directement à la qualité de l'air, il devient alors facile pour eux de conclure que les conditions ne justifient pas qu'ils y accordent plus d'attention; les avertissements sur la qualité de l'air prennent alors une importance secondaire et deviennent quelque chose qui s'applique à d'autres types de

personnes qu'ils croient être plus à risque. Lorsque Montréal a traversé son pire épisode en matière de qualité de l'air jamais observé, en février (un rare événement hivernal qui a soulevé beaucoup d'attention dans les médias), 60 p. 100 de la population l'a noté, mais seulement le quart de ce groupe a rapporté qu'une ou l'autre personne dans leur foyer s'était comportée différemment à la suite de l'avertissement.

Une autre façon par laquelle les gens peuvent réagir à des connaissances sur la pollution de l'air et la santé est de conclure qu'il s'agit d'une chose à laquelle ils ne peuvent rien changer. Cette réponse est la plus évidente chez les Canadiens qui sont suffisamment informés pour savoir que la pollution de l'air pose des risques, mais qui ne font l'expérience d'aucun symptôme pouvant être clairement liés à leur santé et à leur bien-être. La pollution de l'air devient un des nombreux risques regrettables lié à la vie au XXI<sup>e</sup> siècle, mais un risque qu'ils acceptent en bout de ligne.

Les patrons observés en matière de perception et de comportement humains sont fermement ancrés, ce qui signifie qu'il faudra plus que l'introduction d'un nouvel Indice de la qualité de l'air pour amener les Canadiens à porter plus attention à la qualité de l'air dans le contexte de la santé. Ce qui est nécessaire est une initiative plus complète de changement social, semblable à ce qui s'est déroulé en matière d'orientation du public au sujet de l'utilisation des produits du tabac. Pour réaliser des progrès, il sera nécessaire d'avoir un système plus efficace d'information sur la qualité de l'air et un programme de marketing social/d'éducation du public qui recadrera la façon dont les gens réfléchissent et réagissent aux problèmes liés à la qualité de l'air.

Des efforts de cette nature pourraient être orientés dans des domaines tels qu'établir plus fermement dans la compréhension du public que : a) les rapports externes (p.ex. les avertissements) offrent la seule façon efficace de savoir si la qualité de l'air est mauvaise; et b) la pollution de l'air a une incidence sur la santé de chacun, même à de faibles niveaux. L'introduction réussie d'indices météorologiques et de messages au sujet du rayonnement ultraviolet et du refroidissement éolien sont des exemples encourageants sur les progrès possibles visant à susciter une réaction de la population à la qualité de l'air qui soit davantage axée sur la santé.

Les paragraphes suivants présentent des faits saillants clés provenant de chacune des trois étapes de cette étude.

**I. Sondages post-événement de qualité de l'air.** Les résultats de cette recherche révèlent que les avertissements émis au cours des épisodes de mauvaise qualité de l'air dans la vallée du Fraser, en C.-B., dans la région du Grand Toronto et sur l'île de Montréal depuis un an, ont eu une faible incidence sur les résidents de ces localités, en termes d'attirer leur attention et de susciter des réactions visant à réduire leur niveau personnel d'exposition. La réalité de la mauvaise qualité de l'air et son incidence sur la santé est communément admise, mais pas suffisamment évidente pour motiver une majorité des membres de la population de ces collectivités (et probablement d'autres collectivités au Canada) à la prendre au sérieux.

- Le rappel de l'avertissement de smog émis au cours des journées précédentes n'a pas été particulièrement élevé, même si les résidents de Montréal (60 %) et de la vallée du Fraser (54 %) ont eu plus de deux fois plus tendance à le remarquer que ceux résidant dans la région du Grand Toronto (25 %). Cette différence peut s'expliquer par le fait que la qualité de l'air est habituellement plus mauvaise dans la région du Grand Toronto, ce qui rend les avertissements plus fréquents et moins remarquables lorsqu'ils sont émis. Inversement, l'épisode de mauvaise qualité de l'air à Montréal était fortement inhabituel pour la saison hivernale et, comme résultat, il a suscité une vaste couverture médiatique au niveau local ayant contribué à la sensibilisation du public au sujet de l'avertissement.
- Pourquoi un plus grand nombre de résidents n'ont pas remarqué ces avertissements peut être en partie attribuable au fait que les Canadiens se fient habituellement à leurs propres sens (surtout la vue) plutôt aux prévisions dans les médias ou aux annonces pour déterminer quel est l'état de la qualité de l'air dans leur localité. Et la confiance vouée aux signaux sensoriels semble avoir eu peu de valeur au cours de ces épisodes, puisque la plupart des résidents n'ont pas perçu que l'état de la qualité de l'air dans leur localité était très différent que ce qu'ils jugent être des conditions normales. Ce résultat est particulièrement évident pour l'épisode observé à Montréal, au

cours duquel des lectures de 100 et plus sur l'IQA ont été les plus grandes jamais enregistrées pendant l'hiver.

- La recherche indique que la plupart des résidents ont retenu bien peu de l'avertissement, sinon le fait que la qualité de l'air dans leur région n'était pas bonne. Sans suggestion, peu d'entre eux pouvaient se rappeler quoique ce soit au sujet des risques pour la santé, des types de personnes les plus à risque, des façons de réduire l'exposition ou des lectures précises de l'IQA pour la journée. Cela peut tenir au fait que les messages ne sont pas diffusés efficacement, que les gens ne portent pas suffisamment attention pour les entendre ou qu'ils réussissent mal à retenir ce qu'ils entendent.
- Une réponse appropriée en termes de comportement à l'avertissement de smog identifié s'est limitée à une partie de la population de la localité. Chez ceux qui se rappelaient avoir entendu ou vu quelque chose sur le sujet du récent avertissement, une proportion bien plus faible que la moitié des résidents du Grand Toronto (42 %) et de la vallée du Fraser (30 %) affirment qu'eux-mêmes ou une personne de leur foyer a fait quelque chose de différent pour cette raison; cette donnée a été la plus faible à Montréal (24 %), là où les conditions étaient les pires. De surcroît, de tels efforts se sont largement limités à un type de geste, le plus souvent passer moins de temps à l'extérieur ou fermer les fenêtres.
- Dans les trois collectivités, les gens donnent deux raisons principales pour expliquer pourquoi ne rien faire différemment en réaction au récent épisode de mauvaise qualité de l'air dans leur région. Certains ont nié le besoin de poser des gestes parce qu'ils ne sont pas eux-mêmes à risque en raison de la qualité de l'air ambiant à ce moment, soit parce que cela n'a pas d'incidence sur leur santé ou parce qu'ils ne croient pas que le niveau actuel de qualité de l'air pose quelque risque que ce soit. D'autres ont été plus fatalistes, exprimant le point de vue qu'il n'est pas possible de faire quoi que ce soit au sujet de l'épisode de mauvaise qualité de l'air, soit parce qu'il leur était impossible de modifier leur routine à ce moment ou parce qu'ils étaient d'avis qu'il n'y existe pas de façon permettant d'éviter de respirer de l'air de mauvaise qualité.

- Une majorité des résidents de la vallée du Fraser et de la région du Grand Toronto sont quelque peu familiers avec l'IQA local, alors que cette sensibilisation est visiblement plus faible à Montréal. Toutefois, cette information ne semble pas être suivie de près par la plupart de gens dans une ou l'autre des collectivités, puisque moins d'un sur quatre des résidents affirment chercher régulièrement de l'information au sujet de l'IQA pendant les mois d'été. Parmi les formats présentés de l'IQA, les résidents ont le plus tendance à se fier à l'échelle de mots, peut-être parce qu'elle offre visiblement aux personnes la façon la plus intuitive de s'expliquer les différents niveaux de qualité de l'air. Des expressions telles que « bonne » ou « mauvaise » s'insèrent plus facilement dans la « représentation mentale » de la qualité de l'air que la couleur d'un « feu de circulation » ou qu'un chiffre.

II. Sondage national de l'automne 2004. Les résultats de cette étude confirment que la plupart des Canadiens comprennent généralement que la pollution de l'air est un grave problème environnemental et de santé et une majorité d'entre eux sont au moins sensibilisés à l'information sur la qualité de l'air diffusée dans leur localité sous forme d'un IQA ou d'avertissements. Simultanément, la population a une compréhension restreinte ou plutôt inexacte de ce qu'est la pollution de l'air et de son incidence sur la santé; et ils ont beaucoup plus tendance à se fier à ce qu'ils peuvent voir ou sentir plutôt qu'à l'information diffusée sur la qualité de l'air pour déterminer si les conditions locales sont mauvaises et nécessitent des mesures de protection.

- Généralement, la pollution de l'air est fortement reconnue comme posant un risque important pour l'environnement, un risque qui suscite de l'inquiétude. Les deux tiers des Canadiens affirment être très préoccupés par la qualité de l'air, soit un niveau comparable au niveau de préoccupation relatif à la qualité de l'eau et aux produits chimiques et toxiques présents dans l'environnement, ainsi qu'un niveau supérieur à celui exprimé pour des dossiers tels que les changements climatiques et l'épuisement de la couche d'ozone. Simultanément, la population n'est pas plus préoccupée par la qualité de l'air qu'elle ne l'était en 2001 et ce dossier semble en être un que les gens considèrent être une réalité de la vie au XXI<sup>e</sup> siècle.



- La plupart des Canadiens pensent à la pollution de l'air en termes plutôt étroits, soit comme étant surtout localisée et provenant surtout des émissions des véhicules et des usines/industries. Cette conception de la pollution de l'air comme étant localisée à certaines sources amène un grand nombre de personnes à croire que la qualité de l'air est invariablement meilleure en banlieue que dans le centre-ville, et qu'elle est encore meilleure à la campagne. De surcroît, il semble exister une certaine confusion entre la pollution par l'ozone troposphérique et la couche d'ozone dans la stratosphère.
- Les Canadiens se fient surtout à leurs propres signaux sensoriels (ce qu'ils peuvent voir, sentir ou conclure à partir de leurs propres symptômes de santé) qu'aux avertissements dans les médias, pour détecter les conditions en matière pollution atmosphérique. Cette tendance est confirmée par le résultat que la plupart des Canadiens affirment pouvoir identifier la mauvaise qualité de l'air dès qu'ils vont à l'extérieur. Cette confiance vouée aux signaux sensoriels semble être un facteur important pour expliquer le manque d'une confiance accrue à l'égard de l'IQA et des avertissements qui sont diffusés.
- La plupart des Canadiens reconnaissent que la pollution de l'air a une forte incidence sur la santé humaine, perçue surtout en termes d'asthme et d'autres formes de maladies respiratoires. De plus, les gens ont tendance à penser à la pollution de l'air comme ayant des répercussions à long terme plutôt que des effets aigus sur la santé, en grande partie parce c'est la façon dont ils ont tendance à percevoir les maladies respiratoires et, également, en raison de l'absence de la connaissance de preuves directes d'effets aigus et graves sur la santé (p.ex. décès, infarctus).
- Bien qu'ils reconnaissent les risques pour la santé liés à la pollution de l'air, les Canadiens ont tendance à minimiser l'importance de ses effets sur eux directement, une tendance qui est même évidente chez ceux qui vivent dans de grands centres urbains. Même si près de trois sur dix rapportent qu'eux-mêmes ou un membre de leur foyer a subi un ou l'autre type d'effet sur la santé résultant de la pollution de l'air au cours des deux dernières années (surtout sous forme d'asthme ou d'autres troubles respiratoires), bien peu des membres de ce groupe jugent que la pollution de l'air dans leur localité présente un danger grave. Cela suggère que les gens perçoivent davantage la pollution de l'air comme un facteur exacerbant des problèmes préexistants plutôt que comme une source importante de maladie. Peu d'entre eux croient que la pollution de l'air expose les gens en bonne santé (comme eux-mêmes) à des risques liés à l'endroit où ils vivent ou à leur niveau d'activité vigoureuse pendant des épisodes de mauvaise qualité de l'air.
- La faible évaluation du niveau de risque personnel provenant de la pollution de l'air dans leur localité peut être en partie attribuable au fait que les Canadiens ne croient pas qu'ils peuvent faire quelque chose pour réduire ces risques facilement. À l'heure actuelle, on n'observe pas une compréhension répandue des mesures de protection appropriées à prendre en cas de mauvaise qualité de l'air. Les perceptions sur la nature localisée de la pollution de l'air ont tendance à inciter plusieurs à croire que le fait de s'éloigner des zones urbaines ou d'éviter la congestion routière réduiront efficacement le niveau d'exposition. Relativement peu d'entre eux semblent comprendre que les gestes les plus efficaces que la plupart des gens peuvent poser consistent à demeurer à l'intérieur ou à ne pas faire d'exercices vigoureux.
- Les Canadiens ont tendance à supposer que la pollution de l'air commence à avoir une incidence sur la santé lorsque l'IQA de leur localité chute sous le point le plus positif de l'échelle (p.ex. passer de « bonne » à « passable »). Cela suggère soit que les gens en déduisent un seuil à partir duquel on observe des répercussions sur la santé ou que le niveau le plus élevé de l'échelle indique une absence de polluants. Lorsque l'attention est centrée sur le moment auquel ils doivent poser un geste pour protéger leur propre santé, on observe nettement une tendance à réduire d'au moins un niveau de l'échelle (p.ex. de « passable » à « mauvaise »). Cette tendance est apparente pour toutes les régions et tous les formats d'échelle, mais elle est moins prononcée pour l'échelle de couleurs, suggérant que les points médians de ces échelles (p.ex. orange ou jaune) communiquent quelque chose de plus négatif que les points médians des échelles de mots ou numériques.

- Les Canadiens affirment qu'ils aimeraient bien recevoir plus d'information au sujet de la qualité et de la pollution de l'air dans leur localité, mais cela semble être un type d'intérêt non différencié, puisque aucun type d'information ne se démarque comme étant clairement prioritaire. Les gens n'ont peut-être simplement pas suffisamment d'expérience avec ce genre d'information ou n'ont pas suffisamment réfléchi à ce qui peut être le plus important pour eux, pour être en mesure de bien comprendre leurs propres besoins à ce chapitre.

III. Évaluation qualitative de nouveaux concepts de communications au sujet de l'IQA. Les concepts de communications pour un nouvel IQA ont été accueillis favorablement par tous les participants aux séances de groupe auprès desquels ils ont été mis à l'essai et la plupart ont jugé que les messages sur la santé constituent de l'information importante et utile. Un nouvel indice fondé sur ces concepts a la possibilité d'être tout aussi efficace pour influencer le comportement quotidien des gens que d'autres avertissements environnementaux qui sont diffusés et présentent des messages sur la santé, notamment les indices de rayonnement ultraviolet et de refroidissement éolien.

- Les concepts de communications ont été accueillis favorablement quel que soit le degré de sensibilisation des participants aux problèmes de qualité de l'air. Cependant, le niveau d'intérêt et d'acceptation a été plus positif chez les personnes plus sensibilisées, celles qui perçoivent l'indice comme un outil utile et un guide qu'ils peuvent utiliser. Les personnes moins sensibilisées à la qualité de l'air ont eu plus tendance à voir l'information proposée comme étant particulièrement utile à d'autres personnes affligées de problèmes de santé tels que l'asthme.
- Règle générale, chacun des éléments de contenu et de conception du nouvel IQA a suscité des réactions positives. Même si quelques participants ont été en désaccord avec des éléments individuels, des mots ou des phrases apparaissant dans les documents présentés, ces critiques étaient faibles en comparaison avec l'appui généralisé accordé aux nouveaux concepts.
- Les participants ont facilement compris que l'échelle de qualité de l'air est un indice qui illustre le niveau de qualité de l'air ou de pollution de l'air. Cela a été évident même pour la version en tons de gris, quoique la version en couleur a particulièrement bien réussi à communiquer la gamme des niveaux de qualité de l'air variant d'un faible risque (illustré par la couleur bleu ciel pâle) à un risque élevé pour la santé (variant de brun à gris). Les participants ont aussi compris facilement que l'échelle pouvait dépasser 10 en des circonstances extrêmes (ce qui signifie alors un très grand risque pour la santé) et ils ont jugé qu'il était approprié que la couleur tourne au rouge à ce point (pour dénoter un avertissement).
- L'information relative aux prévisions contenue dans l'indice (illustrée par des flèches et du texte additionnel) a généralement été comprise et jugée utile. Les participants sensibilisés ont eu plus tendance que d'autres à indiquer qu'ils utiliseraient cette information dans la planification de leur journée.
- Des mots et des expressions simples, non alarmistes ont été fortement préférés pour les Catégories (p.ex. pour décrire les fourchettes 0-3, 4-6, 7-10 et 10+). Les termes les plus efficaces et populaires ont été ceux ressemblant à « faible », « modéré », « élevé » et « risque très élevé pour la santé. »
- Les messages sur les risques pour la santé qui ont eu la meilleure résonance auprès des participants ont été ceux s'adressant à des groupes cibles précis, notamment les enfants, les personnes âgées et les personnes souffrant d'asthme ou d'autres troubles de santé, de même que ceux qui fournissaient des précautions et étaient concis. Il a été largement accepté de présenter des messages de risques pour la santé distincts pour la population en général et pour les personnes présentant des troubles de santé, de même que pour l'inclusion de la recommandation de demander l'avis d'un médecin.

- L'inclusion de renseignements généraux au sujet de la qualité de l'air et de la santé a aussi été appréciée par la plupart des participants, même si certains ont exprimé des doutes sur la motivation politique de cette partie de l'indice. Simultanément, il est apparent qu'un grand nombre d'entre eux ne comprennent pas des expressions techniques telles que « ozone » et « transport atmosphérique », suggérant que de telles expressions doivent être évitées le plus possible.
- À l'aide de techniques sans suggestions (remue-méninges) et avec suggestions (une liste de noms possibles), les participants ont été encouragés à suggérer le nom le plus approprié pour le nouvel Indice de la qualité de l'air. Dans l'ensemble, la préférence nette a été pour l'expression utilisée à l'heure actuelle « Air Quality Index » dans les séances avec les participants d'expression anglaise, et son équivalent en français « L'indice de la qualité de l'air » dans les groupes d'expression française. Les expressions « Air Health Index » et « Air and Health Index » ont-elles aussi été jugées comme étant des choix acceptables.
- Hormis le contenu des concepts mis à l'essai, la conception et la disposition du nouvel IQA ont aussi très bien fonctionnées. Les participants ont donné des évaluations positives des divers éléments de conception, y compris l'échelle de la qualité de l'air (p.ex. d'une facilité intuitive à comprendre), des gros chiffres qui facilitent la lecture des données de la journée sur la qualité de l'air, ainsi que la présentation efficace d'une quantité considérable d'information dans un espace restreint.



SECTION ONE:  
POST-AIR QUALITY EVENT SURVEYS



## INTRODUCTION

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The first phase of this research consists of telephone surveys conducted with the Canadian public immediately following an air quality event in each of three Canadian urban communities: a portion of the Fraser Valley of British Columbia, the Greater Toronto Area and Montreal Island.

The primary objective of this research is to measure the general public's awareness and response to a specific air quality event, both in general terms and with particular reference to health-related issues.

The research consisted of telephone interviews conducted with representative samples of residents in each of the three regions covered. The B.C. survey consisted of 400 interviews conducted with adults (18 years and older) in the B.C. lower mainland communities of Abbotsford, Chilliwack, Hope, and Langley, conducted between August 14 and 15, 2004. The Toronto survey

consisted of 403 interviews with adults in the Greater Toronto Area (GTA), conducted between August 28 and 29, 2004. The Montreal survey was conducted with 400 residents on February 5 and 6, 2005, during the worst winter air quality episode ever recorded.

In each case, the sample was drawn proportionate to the populations in the respective areas, and the margin of sampling error for the full sample is plus or minus 3.5 percentage points (in 19 out of 20 samples). A more detailed description of the methodology used to conduct these surveys is provided at the end of this section, with a copy of the questionnaire included as an appendix.

This report begins with a summary of key findings and conclusions, followed by a detailed analysis of the survey data for each community. Unless otherwise noted, all results are expressed as a percentage.



## SUMMARY OF KEY FINDINGS

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The results of this research reveal that air quality advisories issued during air quality advisories in the Fraser Valley B.C., Greater Toronto Area and Montreal Island over the past six months, have had a modest impact on local residents, in terms of attracting attention and prompting actions to reduce personal exposure. The reality of poor air quality and its impact on health is widely acknowledged, but not sufficiently salient to motivate a majority of the population in these communities (and likely others across Canada) to take it seriously.

The key findings can be summarized across the following five broad questions.

### 1. To what extent did local area residents notice the recent air quality advisory in their community, and what did they learn from it?

Recall of the air quality advisory issued over the previous few days is not particularly high, although residents in Montreal (60%) and the Fraser Valley (54%) were more than twice as likely to notice it as were those living in the Greater Toronto Area (25%). This difference may be due to the fact that air quality is generally poorer in the GTA, making advisories there more common and so less noticeable when they are issued. In contrast, the Montreal air quality episode was highly unusual for the winter season and, as a result, generated a tremendous amount of local media coverage that would have contributed to public awareness of the advisory.

Why more residents did not notice these advisories may be due in part to the fact (as other research has demonstrated) that Canadians generally rely on their own senses (primarily visual) rather than media forecasts or announcements to determine local air quality conditions. Most people do not make a habit of looking for

such forecasts on a consistent basis, and so may easily miss them when they occur (in this case, fewer than one in five residents who noticed the advisory said they were specifically looking for such information at that time).

And reliance on sensory cues appears to have been of limited value during these episodes, as most residents did not perceive local air quality conditions at the time to be substantially different than what they consider to be normal conditions (only five to six percent in each community rated the ambient conditions during the episode to be significantly worse than normal). This finding is particularly striking in the case of the Montreal episode, during which AQI readings of 100 plus were the highest ever recorded in winter.

Among those who noticed the recent advisory, what did they learn from it? The research indicates that most residents absorbed little more from the advisory than the fact that air quality in their area was not good. Few could recall without prompting anything about potential health risks, the types of people most at risk, ways to reduce exposure or the specific AQI reading for the day. This may be because such messages are not being effectively broadcast, people are not paying enough attention to hear them, or what was heard was not successfully retained in any kind of meaningful way.

### 2. Among those who noticed the advisory, how, if at all, did they respond?

Many of those who could recall hearing or seeing something about the recent air quality advisory generally responded, but in most cases in a limited fashion. Roughly half of those aware of the advisory did take sufficient notice to discuss it with someone else (e.g. friends, family, co-workers), which indicates the information surpassed a minimum threshold of relevance.

But beyond talk, the range and extent of concrete actions taken in response to the advisory appears to be limited. Among those aware of the advisory, minorities of GTA (42%) and Fraser Valley (30%) residents say they or someone in their household did anything differently because of it, and this figure was lowest of all in Montreal (23%) where conditions were actually the worst. Moreover, such efforts were largely limited to one type of action, most commonly to spend less time outdoors or to close windows. While the survey did not more precisely measure the extensiveness of such actions or incorporate any objective measures of validation, it is likely that many of the efforts reported were token and/or over-stated.

In all three communities, people give two principal reasons for not doing anything differently in response to the recent poor air quality episode in their area. First, many say it was *not necessary* to act since they themselves were not affected by, or at risk from, the ambient air quality at the time, either because it was not affecting their health or because they did not believe the current air quality level constituted any risk. This is despite the fact that many who gave such a response also acknowledged that air pollution is generally hazardous to human health.

Second, some residents were more fatalistic; expressing the view that it was *not possible* to do anything about the poor air quality episode, either because they were not able to alter their routine at the time, or because they felt there is simply no way to avoid breathing bad air. This latter justification was much more pronounced in Montreal than in either of the other two communities.

### 3. To what extent do residents understand the health implications of poor air quality, and how does this influence their behaviour?

The absence of widespread protective behaviour in the face of air quality advisories notwithstanding, most residents in these communities do seem to recognize that air pollution is a hazard to people's health. But in the absence of personal or second-hand experience with acute symptoms that can be unavoidably linked to such pollutants, the public tends to define this hazard as just one of the myriad of unavoidable risks that seem to come with the territory of urban life in the 21st century (e.g. traffic accidents, food contaminants).

The absence of compelling evidence of harm that can be attributed to air pollutants, coupled with ambiguous sensory cues about their presence, allows people to dissociate the perceived risks in general from their own personal well-being. Even those with reported respiratory ailments in their household do not express a noticeably different perspective on this issue.

Some residents, when prompted, did indicate that they or someone in their household may have experienced physical or health problems that could be linked to the recent air quality episode (27% in the Fraser Valley, 22% in the GTA and 17% in Montreal). At first glance, this suggests a surprisingly high proportion of residents in these communities are experiencing a physical response to air pollution, or at least are sensitized to this possibility. These results are suggestive and merit more thorough investigation in future research, but do not in themselves warrant a firm conclusion. The health effects reported may have been very minor in scope, and the link to air pollution could be highly speculative, possibly prompted by the question being posed during the survey.

Survey results suggest that the air quality may have to reach a significantly poor level before many residents in these communities are prepared to think seriously about doing something to protect their own health. Many indicated that, while health effects might begin to affect public health when the AQI level declines to "acceptable" or "yellow," most say it would have to get worse before they would consider changing their own routine.

### 4. What do people understand and think about the current Air Quality Index (AQI) in their community?

The research shows that residents in these communities appear to be aware that air quality information or forecasts are provided to their local area, and a majority in B.C. and the GTA report to be at least somewhat familiar with the Air Quality Index (AQI) (but only 40% in Montreal). But no more than one in four residents in any of the three communities say they look for AQI information during summer months on a regular basis, with almost as many acknowledging they never do so. Even in an air pollution "centre" like the GTA, air quality forecasts appear to have a long way go before they are monitored with the same degree of

attention as temperature, precipitation, UV and wind chill forecasts.

Across AQI formats, residents are most familiar with the word scale, in comparison with the colour and numeric scales, and it is the one also considered to be the most useful. While this research did not probe further into the reasons behind this preference, it may be that word descriptions of air quality levels offer the most intuitively obvious way for most people to make sense of differing levels of air quality. That is, terms like “good” or “poor” fit more easily into people’s current “mental model” of air quality, than a colour or number.

While air quality forecast information is not yet actively sought out by many residents, most do express the view that this kind of information is important to them. Among those who recalled the recent advisory, eight in ten rated this information to be at least somewhat useful (even if they did nothing concrete with what they learned). More generally, strong majorities say they consider it important that they receive air pollution advisory information pertaining to the AQI level and forecast episode length, as well as how to limit both personal exposure and their contribution to the problem (it is this last type of information in which the greatest value is placed).

Such a clear expression of interest certainly appears to be at odds with how residents actually seek out the information currently provided. This may simply reflect the tendency for people to express a priority on something they feel they should pay more attention to than they are currently motivated or able to do. At some level, the public recognizes that air pollution is a serious problem that calls for something to be done, and that they are not fully immune from its effects. But with limited knowledge about what can and should be done, coupled with the absence of immediate and visible effects, citizen action remains limited.

## 5. How do awareness, perceptions and actions vary across the population?

The scope of this study was not broad enough to provide for an in-depth analysis of results by key segments of the populations within these two communities, but some broad conclusions can be drawn.

At a general level, the findings reported above do not vary dramatically across the population, as defined by demographic characteristics, health status or general attitudes. While some differences are apparent, the similarities are more noticeable, and the broad conclusions hold equally for almost all of the major segments identified.

The most notable distinction can be found among a minority of the population who appear to be “sensitized” to poor air quality. This group is defined as those residents who are likely to rate local air quality to be fair to poor (both generally and during the recent episode), and who are most likely to rate the health hazards of air pollution to be serious. It is members of this group who are most apt to recall the recent advisory and to have responded to it in some way. This group cannot be defined clearly by demographics, although it is somewhat overrepresented by women.

Just as significant perhaps is the finding that personal health status and the presence of key health problems in the household (ie. respiratory, heart problems) seem to exert only a minor influence on residents’ awareness of the recent advisory, and sensitivity to air pollution and its health effects.

Awareness and response to air pollution advisories tends to be stronger among residents in the middle to older age brackets (30 to 69), and less so among the youngest and oldest members of these communities. The young tend to be the healthiest of all age cohorts and to feel invulnerable to health threats of all types, while those over the age of 70 are already dealing with more pressing health concerns.

Finally, in Montreal language appears to exert some influence on awareness and response to this recent air quality advisory. Francophones are somewhat more sensitized to the issue, rating local conditions more negatively, and reporting more familiarity and use of the local AQI although also less likely to rate it as effective. Allophones are the group least apt to have recalled this recent air quality advisory.





## FRASER VALLEY, B.C. – MAIN FINDINGS

### General perceptions of local air quality and health hazards

*Residents are divided on air quality conditions generally in their community, but most considered it to be worse during the recent episode.*

Fraser Valley residents are somewhat mixed about the general quality of the air in their community. Just under four in ten rate it to be excellent (6%) or good (32%), while a third (34%) rate it to be only fair, and close to three in ten (28%) consider it to be poor. (Q.1)

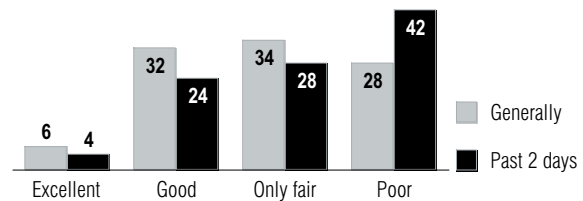
Many residents clearly considered the local air quality to be worse than normal during the recent air quality episode, with more than four in ten (42%) rating the air quality as poor during this period. (Q.2)

While air quality was more apt to be rated poorly during this episode, it was not considered by most residents to be significantly worse than what they believe to be normal air quality conditions. A majority (61%) of residents rated conditions during the recent episode to be the same level as what they consider to be normal, while very few (6%) indicated they thought it was noticeably worse than the norm (ie. rating it more than one scale point worse than their assessment of the typical air quality).

Poor ratings are the plurality view across the population, but are more prevalent among women, while residents 30 to 59 are more likely to rate air quality as *fair to poor*.

As might be expected, perceptions of air quality during the episode can be strongly predicted by residents' assessment of the general conditions:

Perception of local air quality  
Fraser Valley



#### Q.1

*How would you rate the quality of the air in your community, that is, the presence or absence of pollution? Is it generally ...?*

#### Q.2

*And how would you rate the air quality in your community over the past couple of days? Has it been ...?*

- Among those who believe air quality in their area is generally *excellent to good*, 61 percent gave a similar rating during the episode, compared with only 14 percent who rated it as poor.
- Among those who believe air quality is generally *fair to poor*, almost everyone rated air quality during this recent episode as the same, with 60 percent saying it is poor.

Residents' health status and experience with respiratory illnesses do not appear to be significant factors in affecting perceptions of air quality, either generally or during this recent episode.

*Most Fraser Valley residents believe that local air quality conditions present some degree of hazard to people living in the area, with one in four defining this threat as “very serious.”*

Almost everyone believes that local air quality conditions pose at least some degree of hazard to the health of people living in the area. Only a minority (27%) consider this type of threat to be “very serious,” while the most common view is that they are “somewhat” serious (49%) and another 15 percent believe the risk is “not serious.” (Q.3)

Perceptions of local air quality conditions as very serious are most widespread among women (35%, versus 19% of men), and among those who rate local conditions as fair to poor (39%). Presence of specific health conditions in the household do not appear to be a key factor, but perceptions of hazard do increase along with the number of such problems reported.

*Fraser Valley residents have various ideas about how to reduce personal exposure to air pollution, but they are most likely to think about staying indoors.*

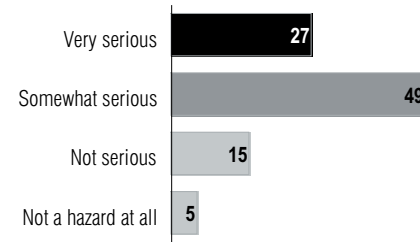
When asked (unprompted) how people can limit their exposure to air pollution and its harmful health effects, most residents are able to identify at least one action they can take, but none is identified by more than one-third of the population. (Q.22)

Residents are most likely to say they can protect their health by staying indoors (35%), with fewer mentioning a change in their driving habits (21%), moving to the country (16%) and purchasing an air purifier (8%). A number of other types of actions are identified, but none by more than five percent of the population. Close to one in five claim either there is no way to limit exposure to harmful air pollution (6%) or could not offer any meaningful response to the question (12%).

Responses to this question are generally similar across the population, but some modest variations emerge:

- The middle-aged residents (those aged 30 to 69) are more likely to suggest staying indoors,

**Air pollution as hazard to health  
Fraser Valley**



**Q.3**

*How much of a hazard do you believe air pollution presents to the health of people living in your area? Does it present ...?*

**How to limit exposure to air pollution/  
health effects**

Fraser Valley Top 5 mentions



**Q.22**

*Air pollution can cause health problems among both healthy people and those with heart or lung illnesses. What, if anything, do you believe people can do to limit their exposure to air pollution and its harmful health effects?*

- Those aged under 60 are almost the only people to suggest an air purifier or filter,
- Better educated residents are more likely to recommend moving to the country.

## Recall of the recent air quality advisory

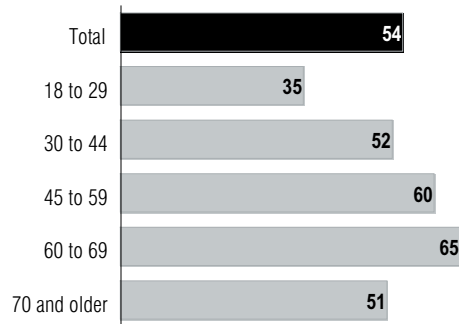
*Awareness of the current advisory is moderately high; with over half of Fraser Valley residents interviewed recalling it.*

More than half (54%) of area residents recall seeing or hearing something about poor air quality in their area over the previous few days, during which an advisory was in effect. Recall of the advisory varies somewhat by population segment:

- Awareness is highest among residents aged 60 to 69 (65%), while lowest among those aged 18 to 29 (35%).
- Recall is substantially greater among those who rate local air quality as only fair to poor (62%), and those who consider air pollution to pose a very serious hazard (69%).
- Recall does not vary by personal health status or the presence of specific health conditions within the household. (Q.4)

Very few (13%) of those residents who noticed this recent advisory indicated that it was something they specifically were looking for; 86 percent reported that they just happened to see or hear it. While only a small number of residents appear to be actively seeking out air quality advisory information, they are also the ones most likely to take action when one occurs (see page 17). (Q.9)

## Recall of recent advisory Fraser Valley By age



### Q.4

*Do you recall seeing or hearing any announcements or information about poor air quality in your area over the past couple of days?*

*Fraser Valley residents are most likely to recall seeing something about the recent air quality advisory on television.*

When asked where they recall seeing or hearing the current advisory, residents are most likely to mention television (57%), almost twice as many as who identify either radio (32%) or newspapers (29%) as their source for this information. Very few mention other sources, such as the Internet (3%), or family members or friends (2%) – residents could provide more than one response. (Q.6)

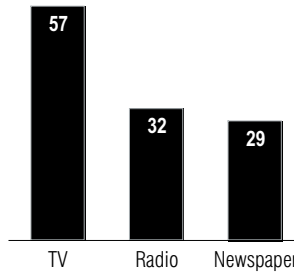
*Recall of specific messages of the advisory was limited, with most able to remember only the most generic information about poor air quality.*

When residents are asked (unaided) about the main message of the air quality information they saw or heard, almost everyone could recall something, but many could not be any more specific than saying it was something about poor air quality (58%).

Relatively few were able to recall hearing or seeing something more specific, such as types of people most affected by air pollution (17%), a request for people to limit personal exposure (14%), a reported measure of air quality (8%), a request for people to reduce pollution-causing behaviours (8%) or possible health problems (7%). At the same time, only four percent of area residents could not provide any response to this question (with this group most likely to include residents aged 70 years and over). (Q.5)

Some differences in recall of specific messages may be evident, although the small size of the subsample who recalled an advisory limits the conclusions. Women are more likely to recall hearing about the types of people most affected by air pollution, while men are more likely to recall something about the Air Quality Index.

Media source for recent advisory  
Fraser Valley Top mentions

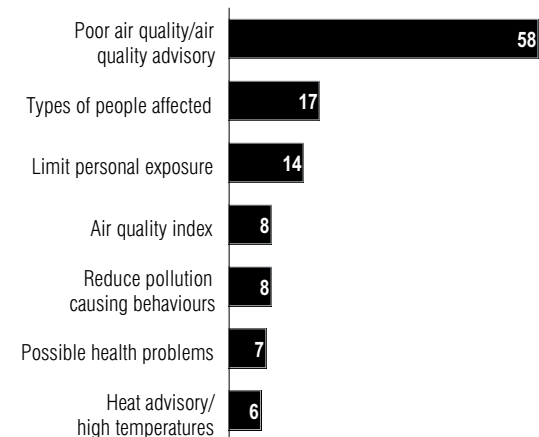


Q.6

*Where do you recall seeing or hearing this announcement about poor air quality?*

*Subsample: Those aware of recent advisory (N=217)*

Specific recall from advisory  
Fraser Valley Top mentions



Q.5

*Can you tell me what it was that you recall hearing or seeing? Anything else?*

*Subsample: Those aware of recent advisory (N=217)*

*Fewer than four in ten Fraser Valley residents could remember anything about the specific level of air quality reported during the recent advisory, with most of this group recalling it to be “poor.”*

Consistent with the non-specific recall of the recent air quality advisory, fewer than four in ten (38%) area residents could remember anything about the specific level of air quality that was reported as part of the advisory. Most of these residents (accurately) recalled the reported air quality level to be “poor” (23%), while the remainder thought it was “fair,” “very poor” or some other label. (Q.8)

Very few residents remember seeing or hearing anything about a numerical (3%) or colour-based (1%) air quality level being reported during this recent advisory.

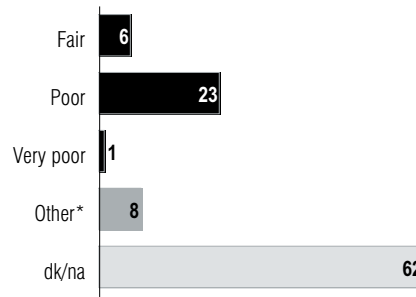
Accurate recall of the specific air quality level is only marginally higher among residents who claim to be familiar with this index, and no greater among those who report to look for it frequently.

*More than one in four Fraser Valley households who were aware of the advisory report to have experienced some type of physical or health problem they believe could be linked to this episode.*

Among residents who recalled the recent advisory, more than one in four report that either they themselves (19%) or someone else in their household (12%) personally experienced some type of physical or health problems in the past couple of days which might be attributed to the poor air quality in the community. (Q.10)

Reports of personal health impacts are higher among women and those with only fair to poor general health status. Health impacts are also strongly associated with perceptions of poor air quality in the area and the belief that air pollution poses a very serious hazard to health.

### Recall of specific level of air quality Fraser Valley



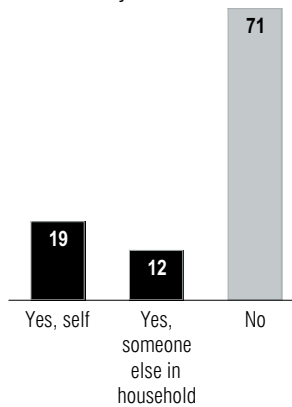
\* Includes numbers

#### Q.8

*Do you recall the specific level of air quality reported in the recent advisory you saw or heard?*

*Subsample: Those aware of recent advisory (N=217)*

### Experienced physical or health problems Fraser Valley



#### Q.10

*Did you or someone else in your household experience any type of physical or health problems over the past couple of days that might be attributed to the current air quality?*

*Subsample: Those aware of recent advisory (N=217)*

## Response to the recent advisory

*Among those aware of the advisory, six in ten Fraser Valley residents claim to have discussed it with others such as family, friends or colleagues.*

Although those who were aware of the recent advisory could recall little specific information, the episode did attract their attention sufficiently to discuss it with others. Of this group, six in ten (60%) report to have discussed this advisory with another person, such as a friend, family members or co-worker. (Q.11)

Such interaction is more commonly reported by women, residents 30 to 59 years of age, and by those who are most sensitized to poor air quality (rate local conditions more negatively and believe air pollution to pose a very serious health threat).

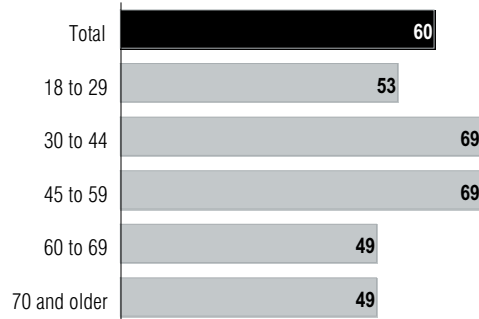
*Most Fraser Valley residents indicate the air quality information they received through the advisory was generally useful.*

Those who recalled the current advisory were mostly positive about the usefulness of the information it contained. Eight in ten rated the advisory information they saw or heard to be very (15%) or generally (64%) useful, with less than one in five indicating it was of little or no use. (Q.15)

This positive assessment is evident across the population, but is clearly linked to residents' perceptions of the current air quality conditions. The advisory information was most widely seen as both very and generally useful by those who rate the current air quality to be poor, those who believe such pollution is a serious health hazard, those who regularly look for air quality information, and those who in this case subsequently took actions as a result of this advisory.

## Discussed advisory/poor air quality with others

Fraser Valley By age



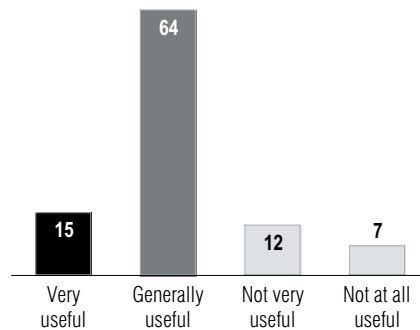
Q.11

*Did you discuss this air quality advisory, or poor air quality, with anyone else that you know, such as friends, family members or co-workers?*

*Subsample: Those aware of recent advisory (N=217)*

## Usefulness of information in advisory

Fraser Valley



Q.15

*Overall, how useful did you find the information provided in the air quality advisory announcement you saw or heard? Was it very, generally, not very or not at all useful?*

*Subsample: Those aware of recent advisory (N=217)*

*Among those aware of the advisory, three in ten say they or others in their household did something differently as a result of this information, most commonly to reduce time spent outdoors.*

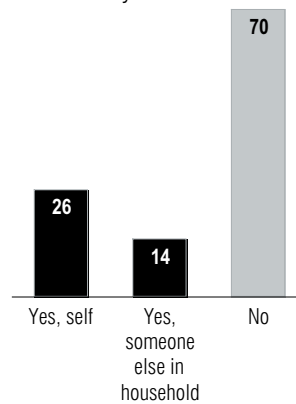
Awareness and attention to air quality advisories is a critical first step, but the primary goal is to promote changes in behaviour that reduce exposure and/or personal contributions to poor air quality conditions. Such action was reported by a small proportion of the population in these Fraser Valley communities.

Among those recalling the recent advisory, a net total of three in ten report that they themselves (26%) or someone else in their household (14%) did anything differently as a result of the current advisory (this represents 16% of all households in the communities surveyed). Such actions are more likely to be reported by women than men. (Q.12)

The most significant factor that appears to determine a behavioural response to the advisory is whether residents were actively looking for this type of information when it was broadcast. The small minority of residents who actively searched out such information were more than twice as likely to report someone in their household taking actions (68%), compared with those who only happened to notice the advisory (24%).

When this group was asked what types of actions they took in response to the advisory (asked unprompted), the most common response was to reduce time spent outdoors (54%), followed by keeping windows closed (15%), and using an inhaler or taking medication (15%). (Note: these data are based on a small sample of only 65 respondents, and should therefore be interpreted with caution). (Q.13)

### Behaviour change as result of advisory Fraser Valley

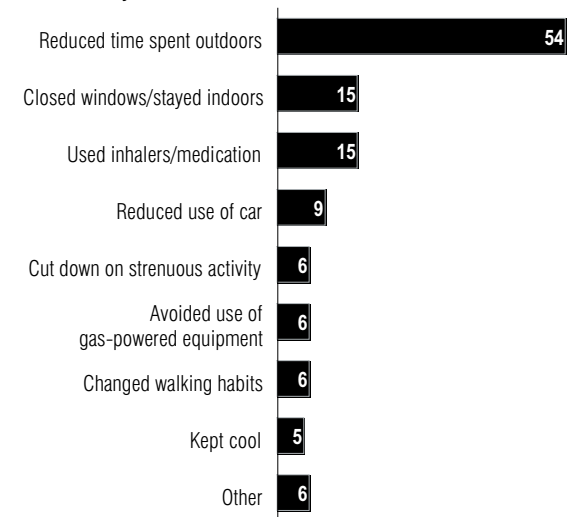


Q.12

*Did you, or someone else in your household, do anything differently as a result of this advisory?*

*Subsample: Those aware of recent advisory (N=217)*

### What people did differently because of advisory Fraser Valley



Q.13

*What did you or the other person do in this case? Anything else?*

*Subsample: Those who did something differently as a result of advisory (n=65)*



*Fraser Valley residents who did not respond to the advisory said it was because they thought it did not apply to them or felt there was nothing they could do about it.*

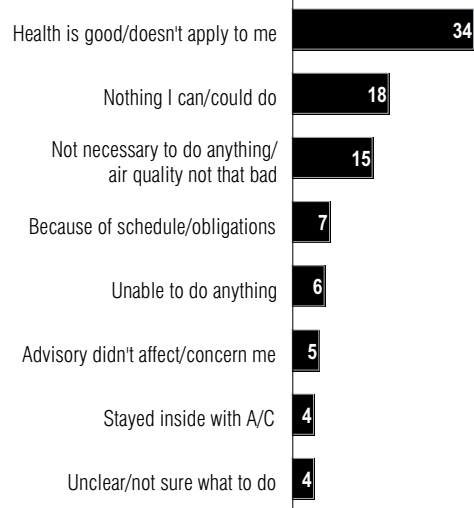
Residents give a number of reasons for why they did not alter their behaviour in response to hearing about poor air quality in their community, but mostly it is either because they did not think it applied to them, or because they felt there was nothing they could do in this situation.

When asked (unaided) why they personally did nothing differently as a result of the current advisory, residents are most likely to say it is because their health is good and so they did not consider themselves to be at risk in this particular situation (34%). Others give similar reasons about a lack of necessity, in terms of the air quality not being that bad (15%) or the belief that the advisory simply did not apply to them (5%). (Q.14)

The other major category of reason pertains to the belief that exposure to poor air was unavoidable. Close to one in four claimed there was nothing they can do either generally (18%) or on this particular occasion (6%), while others mentioned their particular obligations they had for that day (7%).

Women are twice as likely as men to say their health was not at risk from this air quality episode, while men are more likely to claim that there was nothing they could do in this situation.

Why personally did not do anything differently  
Fraser Valley Top mentions



Q.14

*Why did you personally not do anything differently as a result of this advisory?*

*Subsample: Those who did not do anything differently as a result of advisory (n=152)*



## Recall of previous advisories

*Fraser Valley residents unaware of the current advisory were likely to recall such advisories in the past two years. Their responses to these events are similar to those who recalled the current advisory, in terms of perceived health impacts and taking or not taking actions.*

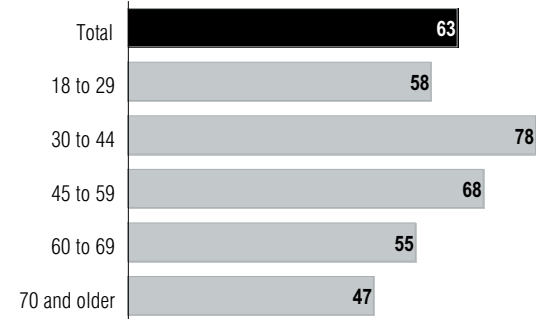
Those residents who could not recall the recent air quality advisory were also asked about whether they recalled seeing or hearing about any such announcements in their area at any time in the past two years. Those responding affirmatively were then asked several of the follow-up questions posed to those aware of the current advisory (as presented in previous sections of this report). Although recall of more distant events is typically not as accurate or meaningful, these questions were included in order to supplement the information collected on the recent advisory. Overall, the awareness, perceptions and actions of this group are generally consistent with those who recalled the current advisory.

Among residents who were not aware of the recent advisory, more than six in ten (63%) could recall such announcements in their area within the past two years. Such recall is greater among residents aged 30 to 59 and those more sensitized to poor air quality. (Q.17)

Consistent with the results among those aware of the current advisory, a significant minority of those recalling previous advisories report that they (22%) or someone else in their household (23%) experienced physical or health problems they feel could be linked to poor air quality at the time. (Q.18)

## Any recall of previous advisories – past two years

Fraser Valley By age



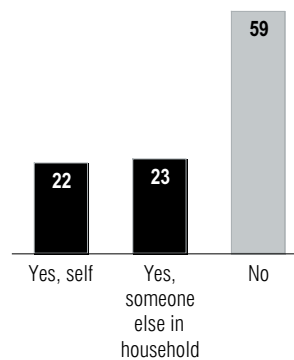
Q.17

*Do you recall seeing or hearing any announcements or information about poor air quality in your area at any time in the past two years?*

*Subsample: Those who do not recall recent advisory (n=183)*

## Health impacts from previous poor air quality – past two years

Fraser Valley



Q.18

*Have you or someone else in your household experienced any type of physical or health problems over the past two years that might be attributed to air quality at the time?*

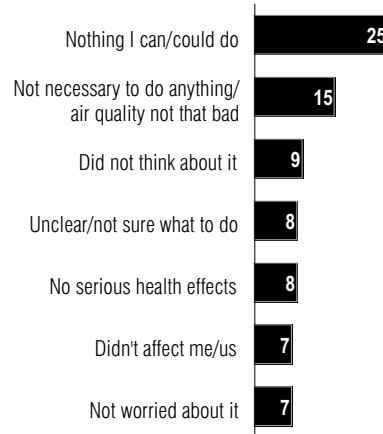
*Subsample: Those who recall a poor air quality announcement in the past two years (n=115)*

Among those recalling previous advisories, a net total of one in five report that they themselves (17%) or someone else in their household (14%) did something differently as a result of the current advisory. Those reporting such actions were most likely to say this involved reducing the time they spent outdoors (50%) (Note: this latter finding is based on a small sample of 24). (Q.19-20)

As with those responding to the recent advisory, residents who chose not to do anything differently in response to past advisories explain this primarily in terms of saying there was nothing they could do (25%), or because they felt such actions were unnecessary in their case (15%). (Q.21)

### Reasons for no behaviour change after past advisories

Fraser Valley Top mentions



Q.21

*Why did you personally not do anything differently after hearing an air quality advisory?*

*Subsample: Those who did not do anything differently as a result of past advisories (n=91)*

## Overall familiarity with the Air Quality Index (AQI)

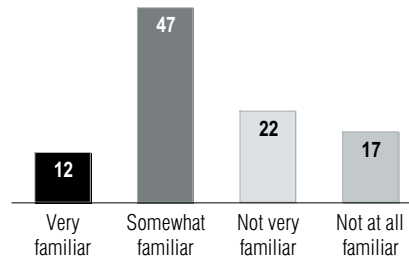
*The survey examined residents' familiarity with, and use of, the local air quality index currently in use in the B.C. Fraser Valley. These questions were asked of all residents, whether or not they recalled the current or previous advisories.*

More than half of Fraser Valley residents claim to be at least somewhat familiar with the Air Quality Index currently broadcast through local media. Few, however report to look for this information on a regular basis during the summer months.

Six in ten area residents report to be either very (12%) or somewhat (47%) familiar with the local Air Quality Index (AQI). Familiarity is higher among certain segments of the population:

- Familiarity is higher among residents aged 30 to 59, anglophones and those with some education beyond high school.
- Familiarity is higher among those with better overall health status, but not among those with specific types of health problems in the household.
- Familiarity is more evident among residents sensitized to poor air quality, those who recall advisories and have taken action.
- A relatively high incidence of those very familiar with the Index is found among people who spend six or more hours per day outdoors (27%). (Q.23)

Familiarity with Air Quality Index  
Fraser Valley



### Q.23

*Would you say you are very, somewhat, not very, or not at all familiar with something called the Air Quality Index for your area currently distributed through the media?*

Although most residents have some familiarity with the local AQI, relatively few actively seek it out on a regular basis. Among those who have any familiarity (81% of the local population), one in five (19%) say they look for AQI information on a regular basis during the summer months. Most indicate they do so occasionally (34%) or rarely (29%), while almost one in five (18%) admit to never doing so. (Q.24)

Regular use of local AQI information is most likely to be among residents:

- Aged 45 to 69
- With two or more specific health problems within the household
- Sensitized to poor air quality
- Most familiar with the AQI and who are most apt to have taken actions in response to the current advisory

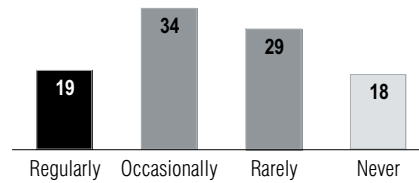
Rare to no use of local AQI information is particularly high among residents aged 18 to 29 (70%).

*Fraser Valley residents are most likely to rely on TV when looking for air quality information in their area.*

Consistent with most Canadians' primary source of news and weather information, Fraser Valley residents who are familiar with and look for air quality information at least rarely are most apt to do so on TV (67%). Less than half as many rely on newspapers (29%), while even fewer look for such information on radio (15%) or the Internet (15%). (Q.25)

TV is the principal media source across the population. Use of newspapers rises along with education, while reliance on the Internet for AQI information also rises with education, while declining with age.

### Frequency of looking for AQI in summer Fraser Valley

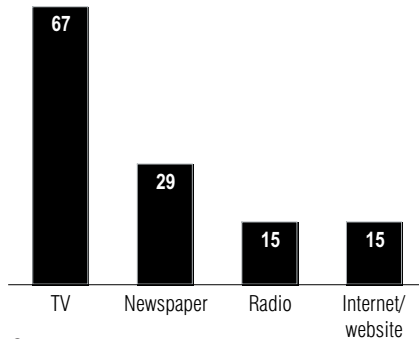


#### Q.24

*How frequently do you look for information on the current Air Quality Index during the summer months? Would it be ...?*

*Subsample: Those who are very/somewhat/not very familiar with AQI (n=325)*

### Media source for air quality information Fraser Valley



#### Q.25

*And where are you most likely to look for Air Quality information? Anything else?*

*Subsample: Those who look for information on AQI (n=266)*

*Fraser Valley residents are most familiar with the word scale format for the AQI, followed by the colour and numeric scales. This is also the format considered to be the most useful of the three.*

The local area AQI is presented in three different formats (words, colours, numbers), but they are not all equally recognized by the local target audience. Among those who claim some familiarity with the AQI, residents are most likely to say they are familiar with the word scale (88%), compared with the colour (48%) and numeric (32%) scales. (Q.26a-c)

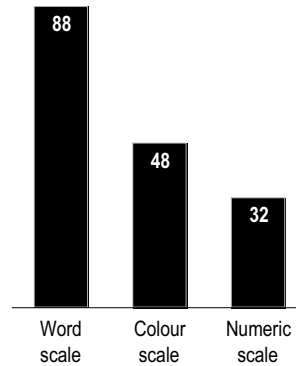
This rank order of familiarity is generally consistent across all segments of the population, but particular formats are more widely recognized by some groups:

- The word format is most familiar among residents under 60 years of age, and those sensitized to poor air quality; it is least well-known among those with fair to poor health status.
- The colour and numeric scales are more likely to be recognized by residents who regularly seek out AQI information.

Not only is the word format the most widely recognized, but it is the one generally considered to be the most useful (in large part because it is best known). When those residents familiar with more than one of the three formats were asked which of them they find to be most useful, close to half (46%) pick the word format, followed by the colour scale (27%) and then the numeric (15%) scale (the one least widely recognized). (Q.27)

The word scale is the top choice across most population segments, but this preference is most widespread among residents sensitized to poor air quality, and those with asthma or other lung disease in their household.

**Familiar with AQI format**  
Fraser Valley

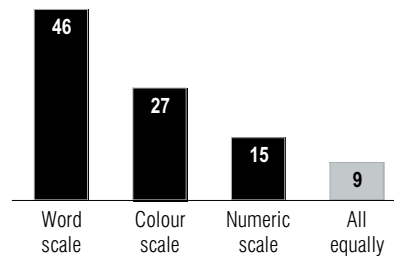


Q.26a-c

*The Air Quality Index is usually presented in three different formats. Which of these are you familiar with ...?*

*Subsample: Those who are very/somewhat/not very familiar with AQI (n=325)*

**Most useful AQI format**  
Fraser Valley



Q.27

*And which of these formats do you personally find to be the most useful?*

*Subsample: Those who are familiar with more than one AQI format (n=186)*

## Perceived AQI threshold for health impacts

*Residents are most likely to say that air quality would have to decline to the worst level on the scale before they would consider changing their routines. At the same time, the middle category of the colour scale is more apt to prompt attention than that on the word scale.*

From a communications perspective, an important question is how citizens interpret the significance of the different levels of air quality reported in an air quality index: At what level would they be prompted to pay attention or change their behaviour? This issue was addressed briefly on the survey by presenting residents with the AQI format they are most familiar with, and asking them to indicate the level at which: a) they believe air quality begins to affect people’s health; and b) they themselves would consider changing their routine.<sup>1</sup>

For the **word scale**, residents are somewhat divided on whether health effects from poor air quality begin when the AQI reaches “acceptable” (38%) or “bad/poor” (52%). But there is much wider agreement that air quality would have to reach the “bad/poor” level before prompting them to think about changing their routine. (Q.28a, 29a)

A similar pattern appears with the **colour scale**, but there is a comparatively stronger tendency to identify the middle category as the threshold level. Six in ten (60%) believe health effects begin when the AQI reaches “yellow,” and this declines to 35 percent when residents define the level at which they would consider changing their routine. These findings suggest that the colour yellow is more likely than the term “acceptable” to be interpreted as a level of air quality that warrants attention and action.<sup>2</sup> (Q.28c, 29c)

## Threshold levels for AQI word and colour scales Fraser Valley

	LEVEL AT WHICH AIR QUALITY STARTS TO AFFECT PEOPLE’S HEALTH	LEVEL AT WHICH AIR QUALITY IS BAD ENOUGH FOR YOU TO CONSIDER CHANGING YOUR ROUTINE
<b>Word scale (N=190)</b>		
Good	5	2
Acceptable	38	6
Bad/poor	52	76
Other/don’t know	4	16
<b>Colour scale (N=60)</b>		
Green	5	7
Yellow	60	35
Red	27	47
Other/don’t know	8	12

Q.28a,c

*Thinking about this {word/colour} scale, at which of the following levels do you think that air quality starts to affect people’s health ...?*

*Subsample: Those most familiar with the particular scale/those who think it is the most useful*

Q.29a,c

*And at what level of the Index do you consider the air quality to be bad enough to think about changing your routine?*

*Subsample: Those most familiar with the particular scale/those who think it is the most useful*

1 These findings are presented for subgroups of the total sample based on respondents’ identification of a most familiar AQI format as follows: word scale: N=190; colour scale: N=60; numeric scale: N=32; this last subgroup is too small to provide for a meaningful analysis.  
2 While these results are based on small samples, the findings are essentially replicated on the subsequent post-season survey conducted with a nationally-representative sample of Canadians in October-November 2004.

## Effectiveness of air quality advisories

*Most Fraser Valley residents believe air quality advisories are generally effective in helping people to limit exposure to air pollution. Others disagree because they believe people do not take advisories seriously or feel there is little anyone can do to protect their health.*

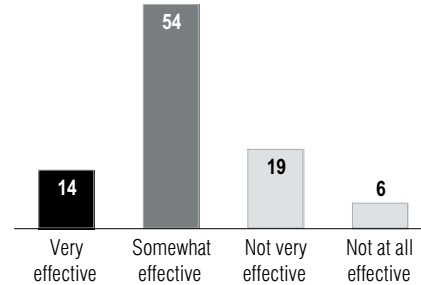
All residents participating in the survey were given a brief description of the purpose of air quality advisories (to inform people about the health impacts associated with air pollution and recommended ways to limit exposure) and then asked how effective they believe current advisories are in promoting this objective.

Fraser Valley residents are generally positive about the effectiveness of local air quality advisories, although few feel strongly about this. Almost seven in ten (68%) believe such advisories are at least somewhat effective in helping people to reduce exposure to air pollution, but of this group only 14 percent say they are “very” effective. (Q. 30)

Views on effectiveness are similar across the population, but are somewhat higher among women, residents under 60 years of age, and those more familiar with the AQI.

When those who find air quality advisories to be not very or not at all effective were asked why they hold this view, they are most likely to say this is because people don’t take them seriously (33% of this group), because there is no easy way for people to limit their exposure (17%) or they have no choice about this (14%), or because people are unaware of this information (14%). (Q.31)

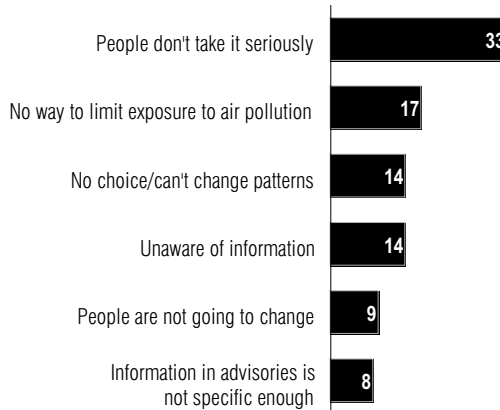
## Effectiveness of advisories in helping people reduce exposure to air pollution Fraser Valley



### Q.30

*One purpose of air quality advisories is to tell people about the health impacts associated with air pollution, and to recommend how people can limit their exposure. Do you feel these types of advisories are very, somewhat, not very or not at all effective in helping people to reduce their exposure to air pollution?*

## Why AQI information isn't effective in helping people reduce exposure to air pollution Fraser Valley Top mentions



### Q.31

*Why do you feel this type of information is not very effective in helping people in this way?*

*Subsample: Those who think it is not very/not at all effective (n=100)*

*Fraser Valley residents place considerable importance in receiving each of four types of air quality information. The greatest interest is expressed in knowing how they can reduce their contribution to the problem, while there is lower priority on knowing the current AQI.*

Residents were asked to rate the level of importance they and others in their household would place on receiving each of four specific types of air pollution advisory information. All four types were seen as being at least somewhat important by at least eight in ten residents across the communities surveyed, although not all are as equally likely to be seen as “very” important (the category that most accurately measures true interest). (Q.32a-d)

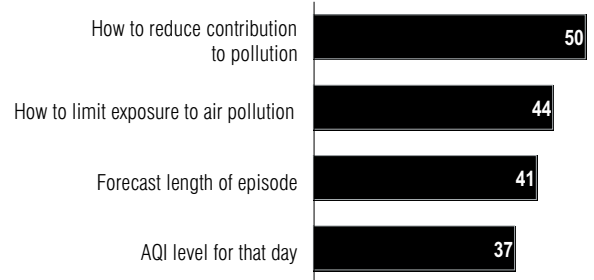
Residents are most likely to consider as very important air quality information on “what you can do to reduce your own contribution to local air pollution” (50%), with only somewhat fewer assigning this same level of priority to “how to limit your exposure to air pollution” (44%) and “the forecast of how long the poor air quality episode is supposed to last” (41%).

Fewer than four in ten (37%) say it is very important for them to receive air quality information on “the air quality index or level of pollution for that day.”

Across the four types of information, strong interest tends to be more widely expressed by women, residents in households with children under 16 years of age, those who spend more time outdoors, those sensitized to air quality problems, and those most attentive and responsive to air quality advisories.

Importance of various types of air pollution advisory information

Fraser Valley Very important



Q.32a-d

*And would you say it is very, somewhat, not very or not at all important for you or others in your household to receive each of the following types of air pollution advisory information ... The Air Quality Index or level of pollution for that day ... The forecast of how long the poor air quality episode is supposed to last ... How to limit your exposure to air pollution ... What you can do to reduce your own contribution to local air pollution?*



## GREATER TORONTO AREA – MAIN FINDINGS

### General perceptions of local air quality and health hazards

*GTA residents are divided on air quality conditions generally in their community, but many considered it to have been somewhat worse during the recent episode.*

A majority of GTA residents feel positively about the general quality of the air in their community. Six in ten rate it to be good (52%) or excellent (8%), while just over a quarter (28%) rate it to be only fair and only one in ten (11%) consider it to be poor (such ratings are noticeably more positive than those given by Fraser Valley residents!). (Q.1)

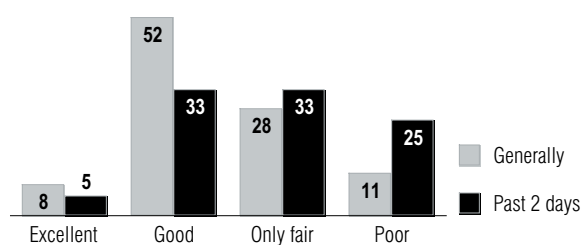
Most residents considered the local air quality to be worse than normal during the recent air quality episode, with one quarter (25%) rating the air quality as poor during this period. (Q.2)

As in the Fraser Valley B.C., however, most GTA residents did not perceive air quality during this recent episode to be substantially worse than what they consider to be ambient conditions. More than half (54%) gave the same ratings for both the recent episode and the general air quality for the area, and only six percent indicated the former to be significantly worse than the latter (ie. giving a rating at least two scale points worse).

There were no differences by gender in terms of the general quality of the air in the community, but women were more likely than men to rate the air quality as only fair or poor during the recent episode.

The oldest age group, those aged 70+, were more likely to rate the air quality as generally good.

### Perception of local air quality Greater Toronto Area



#### Q.1

*How would you rate the quality of the air in your community, that is, the presence or absence of pollution? Is it generally ...?*

#### Q.2

*And how would you rate the air quality in your community over the past couple of days? Has it been ...?*

As might be expected, perceptions of air quality during the episode can be strongly predicted by residents' assessment of the general conditions:

- Among those who believe air quality in their area is generally *excellent to good*, 57% gave a similar rating during the episode, compared to only 9% who rated it as poor.
- Among those who believe air quality is generally *fair to poor*, almost all rated this episode as the same, with 50% saying it is poor.

Those with health problems in the household were somewhat more likely to rate the air quality both generally, and during the episode, as fair or poor.

*A majority of GTA residents believe that local air quality conditions present some degree of hazard to people living in the area, with one in six defining this threat as “very serious.”*

Almost everyone believes that local air quality conditions pose at least some degree of hazard to the health of people living in the area. Just over one in six (17%) consider this type of threat to be “very serious,” while the most common view is that they are “somewhat” serious (48%), while another 24 percent rate the hazard as “not serious.” (Q.3)

Perceptions of local air quality conditions as very serious are more likely among those who rate the air quality in the community as generally fair to poor, and also among those who describe their health as fair or poor.

*GTA Residents have various ideas about how to reduce personal exposure to air pollution, but they are most likely to think about staying indoors.*

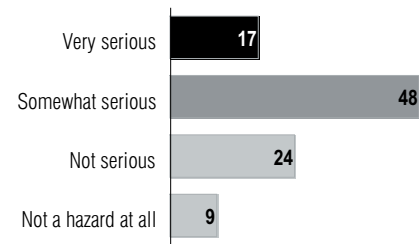
When asked (unprompted) how people can limit their exposure to air pollution and its harmful health effects, most residents are able to identify at least one action they can take, but only one action is identified by more than one-third of the population. (Q.22)

Residents are most likely to say they can protect their health by staying indoors (37%), with fewer mentioning a change in their driving habits (23%), moving to the country (8%), using public transit (7%) and purchasing a mask (7%). A large number of other types of actions are identified, but none by more than five percent of the population. One in six say either there is no way to limit exposure to harmful air pollution (5%) or could not offer any meaningful response to the question (10%).

Responses to this question are generally similar across the population, but with some modest variations:

- Those with higher levels of education are more likely to suggest staying indoors.
- Those with no more than a high school education are more likely to suggest changing driving habits.

**Air pollution as hazard to health  
Greater Toronto Area**



**Q.3**

*How much of a hazard do you believe air pollution presents to the health of people living in your area? Does it present ...?*

**How to limit exposure to air pollution/  
health effects**

Greater Toronto Area Top 5 mentions



**Q.22**

*Air pollution can cause health problems among both healthy people and those with heart or lung illnesses. What, if anything, do you believe people can do to limit their exposure to air pollution and its harmful health effects?*

## Recall of the recent air quality advisory

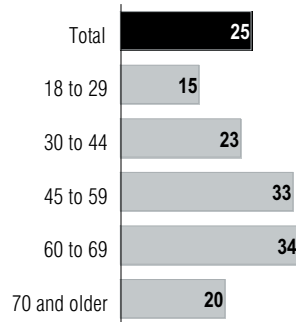
*One in four GTA residents can recall seeing or hearing anything about an air quality advisory over the previous few days.*

In contrast to the results in the Fraser Valley, a smaller proportion (25%) of GTA residents recall seeing or hearing something about poor air quality in their area over the previous few days, during which an advisory was in effect. Recall of the advisory varies somewhat by population segment:

- Awareness is highest among residents aged 45 to 59 (33%) and 60 to 69 (34%), while lowest among those aged 18 to 29 (15%).
- Recall is substantially greater among those who rate local air quality as only fair to poor (39%), and those who consider air pollution to pose a very serious hazard (46%).
- Recall does not vary by personal health status and only slightly with the presence of specific health conditions within the household. (Q.4)

Very few (19%) of those residents who noticed this recent advisory indicated that it was something they specifically were looking for; 80 percent reported that they just happened to see or hear it. While this represents a small number of residents who appear to be actively seeking out air quality advisory information, they are also the ones most likely to take action when one occurs (see page 35). (Q.9)

## Recall of recent advisory Greater Toronto Area By age



### Q.4

*Do you recall seeing or hearing any announcements or information about poor air quality in your area over the past couple of days?*

*GTA residents are most likely to recall seeing something about the recent air quality advisory on television, although the radio is also a major source of information.*

When asked where they recall seeing or hearing the current advisory, GTA residents are most likely to mention television (56%), although a large number also report that they learned of the advisory from the radio (44%). Very few mention newspapers (7%) as their source for this information. Even fewer mention other sources, such as the Internet (3%), or family members or friends (2%) (Respondents could provide more than one response). (Q.6)

Radio is the primary source of air quality advisory information for older residents.

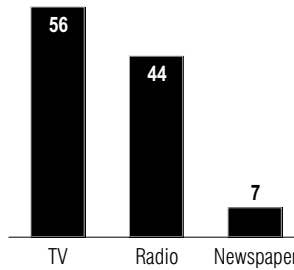
*Recall of specific messages of the advisory was limited, with most able to remember only the most generic information about poor air quality.*

When GTA residents are asked (unaided) about the main message of the air quality information they saw or heard about, almost everyone could recall something, but many could not be any more specific than saying it was something about a smog alert (47%) or poor air quality (34%).

By comparison, few recall hearing or seeing something more specific, such as the air quality index (11%) or a reported measure of air quality possible health problems (5%), the types of people most affected by air pollution (4%), a request for people to limit personal exposure (4%), a request for people not to exert themselves (4%), or something about a heat advisory or high temperatures (3%). Only three percent of area residents, however, could not provide any response to this question. (Q.5)

The small size of the subsample who recalled an advisory limits analysis of any differences between groups.

Media source for recent advisory  
Greater Toronto Area Top mentions

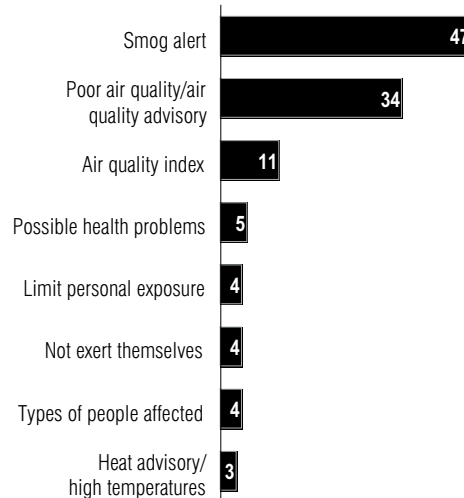


Q.6

*Where do you recall seeing or hearing this announcement about poor air quality?*

*Subsample: Those aware of recent advisory (n=102)*

Specific recall from advisory  
Greater Toronto Area Top mentions



Q.5

*Can you tell me what it was that you recall hearing or seeing? Anything else?*

*Subsample: Those aware of recent advisory (n=102)*

*One in four GTA residents could remember anything about the specific level of air quality reported during the recent advisory, and most of this group provided inaccurate verbal or numeric levels.*

Consistent with the non-specific recall of the recent air quality advisory, only one in four area residents (24%) could remember anything about the specific level of air quality that was reported as part of the advisory. And few of these residents (accurately) recalled the reported air quality level to be “poor” (6%), while the remainder of those mentioning a verbal scale thought it was “high”, “fair”, “bad” or “moderate.” (Q.8)

Less than one in ten residents remember seeing or hearing anything about a numerical (9%) air quality level being reported during this recent advisory and all of these mentions were inaccurately low. No one mentioned a colour scale reading.

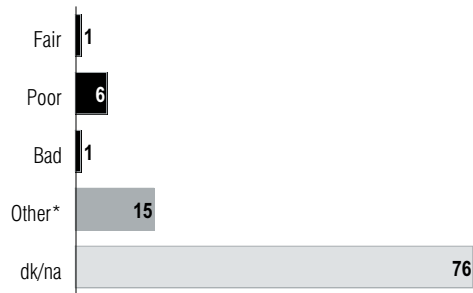
The subsample of those residents who recall the advisory is too small to look at any differences by group.

*More than one in five GTA households who were aware of the advisory report to have experienced some type of physical or health problem they believe might be linked to this episode.*

Among residents who recalled the recent advisory, a net total of more than one in five report that either they themselves (16%) or someone else in their household (12%) personally experienced some type of physical or health problems in the past couple of days which might be attributed to the poor air quality in the community. (Q.10)

Health impacts are strongly associated with those residents who specifically looked for the advisory, and among those with perceptions of fair/poor air quality in the area and the belief that air pollution poses a very serious hazard to health.

Recall of specific level of air quality  
Greater Toronto Area



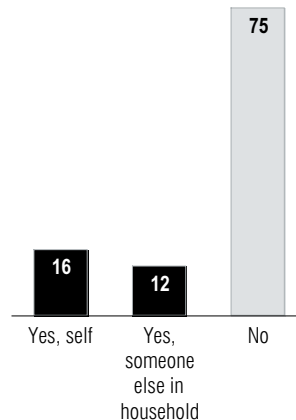
\* Includes numbers

Q.8

*Do you recall the specific level of air quality reported in the recent advisory you saw or heard?*

*Subsample: Those aware of recent advisory (n=102)*

Experienced physical or health problems  
Greater Toronto Area



Q.10

*Did you or someone else in your household experience any type of physical or health problems over the past couple of days that might be attributed to the current air quality?*

*Subsample: Those aware of recent advisory (n=102)*

## Response to the recent advisory

*Among those GTA residents aware of the advisory, nearly half claim to have discussed it with others such as family, friends or colleagues.*

Although those who were aware of the recent advisory could recall little specific information, the episode did attract their attention sufficiently to discuss with others. Of this group, almost half (47%) report to have discussed this advisory with another person, such as a friend, family members or co-worker. (Q.11)

Such interaction is more commonly reported by residents 45 to 59 years of age, and those who are most sensitized to poor air quality (ie. rate local conditions more negatively and believe air pollution to pose a serious health threat).

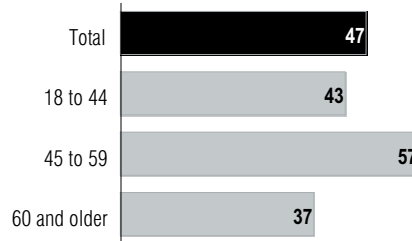
*Most residents indicate the air quality information they received through the advisory was generally useful.*

Those who recalled the current advisory were mostly positive about the usefulness of the information it contained. Over three-quarters of those who recalled the advisory rated the information they saw or heard to be very (22%) or generally (55%) useful, with about one-quarter indicating it was of little or no use. (Q.15)

This positive assessment is evident across the population, but is clearly linked to residents' perceptions of the current air quality conditions. The advisory information was most widely seen as very useful by those who believe such pollution is a very serious health hazard, who regularly look for air quality information, and who in this case subsequently took actions as a result of this advisory.

## Discussed advisory/poor air quality with others

Greater Toronto Area By age



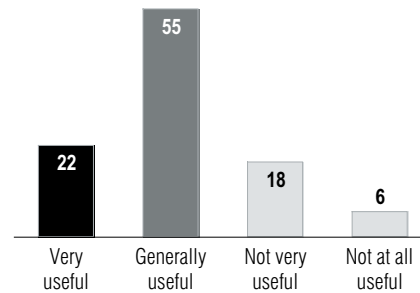
### Q.11

*Did you discuss this air quality advisory, or poor air quality, with anyone else that you know, such as friends, family members or co-workers?*

*Subsample: Those aware of recent advisory (n=102)*

## Usefulness of information in advisory

Greater Toronto Area



### Q.15

*Overall, how useful did you find the information provided in the air quality advisory announcement you saw or heard? Was it very, generally, not very or not at all useful?*

*Subsample: Those aware of recent advisory (n=102)*

*Among those aware of the advisory, four in ten say they or others in their household did something differently as a result of this information, most commonly to reduce time spent outdoors.*

Awareness and attention to air quality advisories is a critical first step, but the primary goal is to promote changes in behaviour that reduce exposure and/or personal contributions to poor air quality conditions. Such action was reported by four in ten households among those in the GTA who were aware of the advisory.

Among those recalling the recent advisory, a net total of slightly more than four in ten report that they themselves (37%) or someone else in their household (24%) did something differently as a result of the current advisory (this represents 11% of all households in the area surveyed). Such actions are somewhat more likely to be reported by women than men. (Q.12)

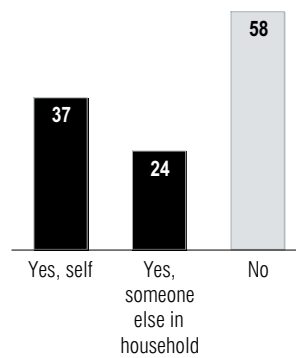
The most significant factors that appear to determine a behavioural response to the advisory is whether residents were actively looking for this type of information when it was broadcast and whether or not they are sensitized to air quality and its health affects:

- The small minority of residents who actively searched out such information were almost twice as likely to report someone in their household taking actions (68%), compared with those who only happened to notice the advisory (35%).

Those in households where someone took some action are more likely to be those who rate the local air quality as only fair or poor, and consider air pollution to be a very serious hazard.

When this group was asked what types of actions they took in response to the advisory (asked unprompted), the most common response was to reduce time spent outdoors (42%), followed by keeping windows closed (23%), and keeping cool (14%) and cutting down on strenuous activity (14%). (Note: these data are based on a small sample of only 43 respondents, and should therefore be interpreted with caution). (Q.13)

### Behaviour change as result of advisory Greater Toronto Area

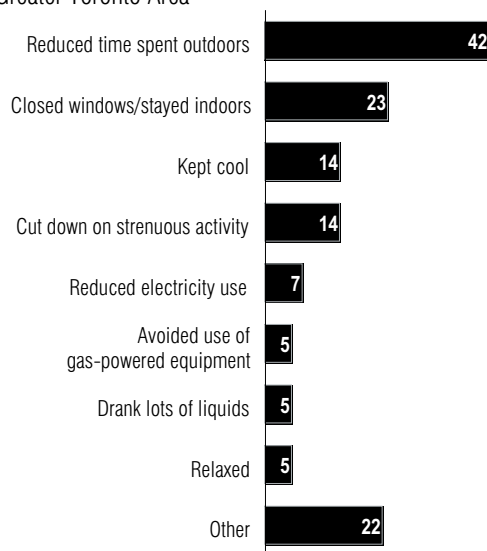


#### Q.12

*Did you, or someone else in your household, do anything differently as a result of this advisory?*

*Subsample: Those aware of recent advisory (n=102)*

### What people did differently because of advisory Greater Toronto Area



#### Q.13

*What did you or the other person do in this case? Anything else?*

*Subsample: Those who did something differently as a result of advisory (n=43)*



*GTA residents who did not change their behaviour in response to the advisory say this was because it did not apply to them, or because there was nothing they felt they could do.*

Residents give a number of reasons for why they did not alter their behaviour in response to hearing about poor air quality in their community, but mostly it is either because they did not think it applied to them, or because they felt there was nothing they could do in this situation.

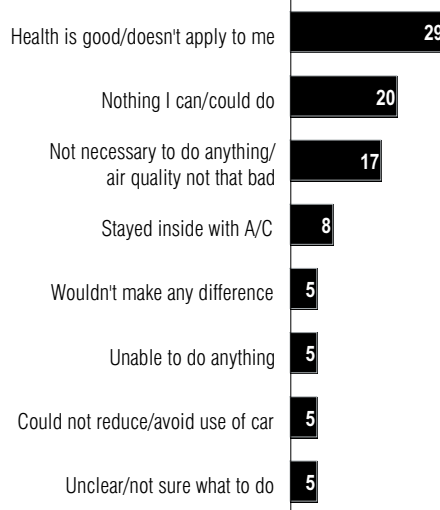
When asked (unaided) why they personally did nothing differently as a result of the current advisory, residents are most likely to say it is because their health is good and so they did not consider themselves to be at risk in this particular situation (29%). Others give similar reasons about a lack of necessity, in terms of the air quality not being that bad (17%), or the belief that the advisory did not affect or concern them (2%). (Q.14)

The other major category of reason pertains to the belief that exposure to poor air was unavoidable. One in five (20%) claimed there was nothing they could do in this situation, while others mentioned that they were unable, or unwilling, to reduce or avoid use of their car that day (5%).

One in ten (8%) reported to have taken action by staying inside and or used air conditioning.

There were no differences between demographic groups in their responses to this question.

**Why personally did not do anything differently**  
Greater Toronto Area Top mentions



*Q.14*

*Why did you personally not do anything differently as a result of this advisory?*

*Subsample: Those who did not do anything differently as a result of advisory (n = 59)*



## Recall of previous advisories

*Half of the GTA residents unaware of the current advisory were able to recall such advisories in the past two years. Their responses to these events are similar to those who recalled the current advisory, in terms of perceived health impacts and taking or not taking actions.*

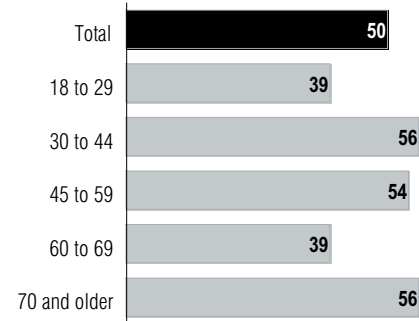
Those residents who could not recall the recent air quality advisory were also asked about whether they recalled seeing or hearing about any such announcements in their area at any time in the past two years. Those responding affirmatively were then asked several of the follow-up questions posed to those aware of the current advisory (as presented in previous sections of this report). Although recall of more distant events is typically not as accurate or meaningful, these questions were included in order to supplement the information collected on the recent advisory. Overall, the awareness, perceptions and actions of this group are generally consistent with those who recalled the current advisory.

Among residents who were not aware of the recent advisory, one half (50%) could recall such announcements in their area within the past two years. Such recall is greater among residents aged 30 to 59 and those aged over 70, those with a university education, and those more sensitized to poor air quality. (Q.17)

Consistent with the results among those aware of the current advisory, a significant minority of those recalling previous advisories report that they (15%) or someone else in their household (19%) experienced physical or health problems they feel could be linked to poor air quality at the time. (Q.18)

## Any recall of previous advisories – past two years

Greater Toronto Area By age



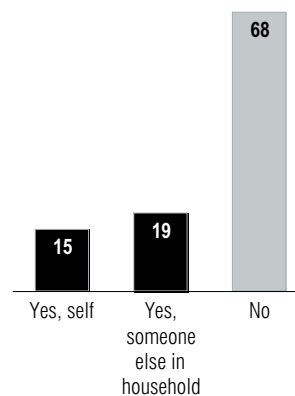
### Q.17

*Do you recall seeing or hearing any announcements or information about poor air quality in your area at any time in the past two years?*

*Subsample: Those who do not recall recent advisory (n=301)*

## Health impacts from previous poor air quality – past two years

Greater Toronto Area



### Q.18

*Have you or someone else in your household experienced any type of physical or health problems over the past two years that might be attributed to air quality at the time?*

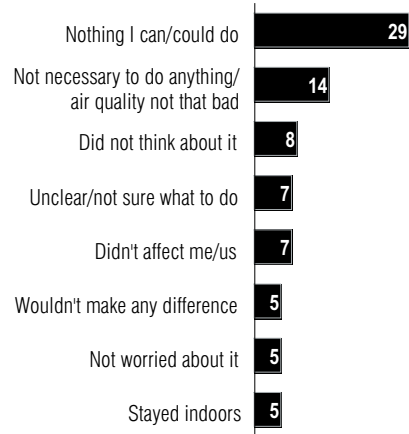
*Subsample: Those who recall a poor air quality announcement in the past two years (n=151)*

Among those recalling previous advisories, a net total of two in five report that they themselves (36%) or someone else in their household (17%) did anything differently as a result of the current advisory. Those reporting such actions were more likely to be women and most likely to say this involved reducing the time they spent outdoors (73%). (Q.19-20)

As with those responding to the recent advisory, residents who chose not to do anything differently in response to past advisories explain this primarily in terms of saying there was nothing they could do (29%), or because they felt such actions were unnecessary in their case (14%). (Q.21)

### Reasons for no behaviour change after past advisories

Greater Toronto Area Top mentions



#### Q.21

*Why did you personally not do anything differently after hearing an air quality advisory?*

*Subsample: Those who did not do anything differently as a result of past advisories (n=91)*

## Overall familiarity with the Air Quality Index (AQI)

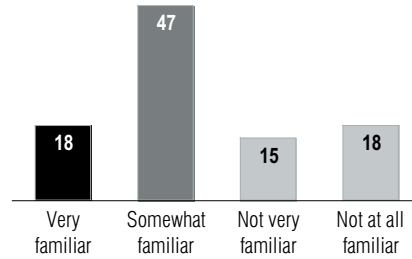
*The survey examined residents' familiarity and use of the local air quality index currently in use in the Greater Toronto Area. These questions were asked of all residents, whether or not they recalled the current or previous advisories.*

Two-thirds of GTA residents claim to be at least somewhat familiar with the Air Quality Index currently broadcast through local media. Relatively few, however, report to look for this information on a regular basis during the summer months.

Fully two-thirds of Toronto area residents report to be either very (18%) or somewhat (47%) familiar with the local Air Quality Index (AQI). Familiarity is higher among certain segments of the population:

- Familiarity is higher among residents aged 30 to 59, anglophones and those with education beyond high school.
- Familiarity is higher among those with better overall health status, but not among those with specific types of health problems in the household.
- A strong familiarity is more evident among residents sensitized to poor air quality, those who recall advisories and regularly look for advisories.
- A relatively high incidence of those very familiar with the Index is found among men (23%), and people who spend six or more hours per day outdoors. (Q.23)

### Familiarity with Air Quality Index Greater Toronto Area



Q.23

*Would you say you are very, somewhat, not very, or not at all familiar with something called the Air Quality Index for your area currently distributed through the media?*

Although most residents have some familiarity with the local AQI, relatively few actively seek it out on a regular basis. Among those who have any familiarity (81% of the GTA population), only one in four (25%) say they look for AQI information on a regular basis during the summer months. Most indicate they do so occasionally (35%), while a further one in four look for it rarely (23%) and almost one in five (17%) admit to never doing so. (Q.24)

Regular use of local AQI information is most likely to be among:

- Residents aged 30 to 59 or over 70
- Those who describe their state of health as fair or poor (48%) – although caution is advised as this is a small sample of 27
- Those sensitized to poor air quality
- Residents most familiar with the AQI and who are most apt to have taken actions in response to the current advisory

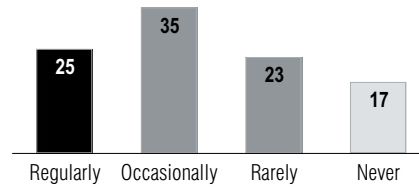
Rare to no use of local AQI information is particularly high among residents aged 18 to 29 (58%).

*GTA residents are most likely to rely on TV when looking for air quality information in their area.*

Consistent with most Canadians' primary source of news and weather information, Toronto area residents who are familiar with and look for air quality information at least rarely are most apt to do so on TV (74%). Only one in five rely on radio (20%), while even fewer look for such information in newspapers (18%) or the Internet (16%). (Q.25)

TV is the principal media source across the population. Radio is a somewhat more popular source for men (25%) and those residents aged 60 to 69 (39%). Use of newspapers is more prevalent among men, while reliance on the Internet for AQI information is also favoured more by men and younger residents.

### Frequency of looking for AQI in summer Greater Toronto Area

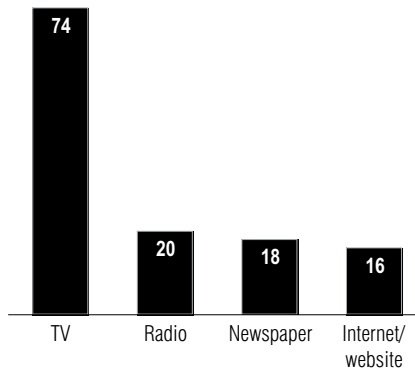


#### Q.24

*How frequently do you look for information on the current Air Quality Index during the summer months? Would it be ...?*

*Subsample: Those who are very/somewhat/not very familiar with AQI (n=325)*

### Media source for air quality information Greater Toronto Area



#### Q.25

*And where are you most likely to look for Air Quality information? Anything else?*

*Subsample: Those who look for information on AQI (n=270)*

*GTA residents are most familiar with the word scale format for the AQI, well ahead of the colour and numeric scales, and the word format is considered to be the most useful.*

The local area AQI is presented in three different formats (words, colours, numbers), but they are not all equally recognized by local residents. Among those who claim some familiarity with the AQI, residents are most likely to say they are familiar with the word scale (81%), compared with the colour (43%) and numeric (41%) scales. (Q.26a-c)

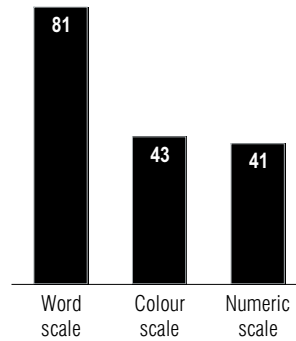
This rank order of familiarity is generally consistent across all segments of the population, but particular formats are more widely recognized by some groups:

- The word format is even more familiar among those sensitized to poor air quality.
- The numeric format is more likely to be mentioned by men than by women and by residents under the age of 60.
- The colour scale is more familiar among those who regularly look for AQI information and by residents under 45 years of age.

Not only is the word format the most widely recognized, but it is the one generally considered to be the most useful (in large part because it is best known). When those residents familiar with more than one of the three formats were asked which of them they find to be most useful, slightly more than half (52%) pick the word format, followed by the colour scale (22%) and then the numeric (21%) scale. (Q.27)

The word scale is the top choice across most population segments, but this preference is most widespread among residents who consider air pollution to be a serious health hazard.

**Familiar with AQI format**  
Greater Toronto Area

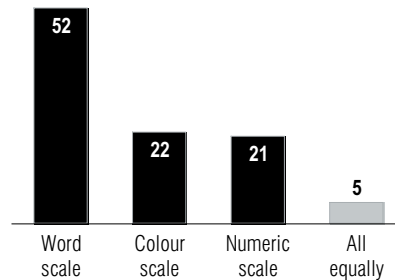


Q.26a-c

*The Air Quality Index is usually presented in three different formats. Which of these are you familiar with ...?*

*Subsample: Those who are very/somewhat/not very familiar with AQI (n=325)*

**Most useful AQI format**  
Greater Toronto Area



Q.27

*And which of these formats do you personally find to be the most useful?*

*Subsample: Those who are familiar with more than one AQI format (n=184)*

## Perceived AQI threshold for health impacts

*Residents are most likely to say that air quality would have to decline to the worst level on the scale before they would consider changing their routines. At the same time, the middle category of the colour scale is more apt to prompt attention than that on the word scale.*

From a communications perspective, an important question is how citizens interpret the significance of the different levels of air quality reported in an air quality index: At what level would they be prompted to pay attention or change their behaviour? This issue was addressed briefly on the survey by presenting residents with the AQI format they are most familiar with, and asking them to indicate the level at which: a) they believe air quality begins to affect people’s health; and b) they themselves would consider changing their routine.<sup>3</sup>

For the **word scale**, residents are somewhat divided on whether health effects from poor air quality begin when the AQI reaches “acceptable” (36%) or “bad/poor” (60%). But there is much wider agreement that air quality would have to reach the “bad/poor” level (79%) before prompting them to think about changing their routine. (Q.28a, 29a)

A similar pattern appears with the **colour scale** but, as in the Fraser Valley, there is a comparatively stronger tendency to identify the middle category as the threshold level. Two-thirds (65%) believe health effects begin when the AQI reaches “yellow,” and this declines to 33 percent when residents define the level at which they would consider changing their routine. These findings suggest that the colour yellow is more likely than the term “acceptable” to be interpreted as a level of air quality that warrants attention and action. (Q. 28c, 29c)

A similar pattern is observed with the **numeric scale**. In this case, the threshold for both general health effects and for personal action falls somewhere between the word and colour scales (the middle category of “26 to 50” is the modal choice). (Q. 28b, 29b)

## Threshold levels for AQI word, colour and numeric scales

### Fraser Valley

	LEVEL AT WHICH AIR QUALITY STARTS TO AFFECT PEOPLE’S HEALTH	LEVEL AT WHICH AIR QUALITY IS BAD ENOUGH FOR YOU TO CONSIDER CHANGING YOUR ROUTINE
<b>Word scale (N=181)</b>		
Good	2	2
Acceptable	36	9
Bad/poor	60	79
Other/don’t know	2	9
<b>Colour scale (N=51)</b>		
Green	2	2
Yellow	65	33
Red	31	57
Other/don’t know	2	8
<b>Numeric scale (N=60)</b>		
0-25	8	2
26-50	48	37
51 plus	32	48
Other/don’t know	12	14

#### Q.28a-c

*Thinking about this {word/colour/numeric} scale, at which of the following levels do you think that air quality starts to affect people’s health ...?*

*Subsample: Those most familiar with the particular scale/those who think it is the most useful*

#### Q.29a-c

*And at what level of the Index do you consider the air quality to be bad enough to think about changing your routine?*

*Subsample: Those most familiar with the particular scale/those who think it is the most useful*

<sup>3</sup> These findings are based on subgroups of the total sample based on respondents’ identification of a most familiar AQI format as follows: word scale: N=181; colour scale: N=51; numeric scale: N=60. These findings are based on small samples, but are essentially replicated in the post-season survey subsequently conducted with a nationally-representative sample of 1,500 Canadians in October-November 2004.

## Effectiveness of air quality advisories

*Most GTA residents believe air quality advisories are at least somewhat effective in helping people to limit exposure to air pollution. Others maintain that people do not take advisories seriously or feel there is little that anyone can do to protect their health.*

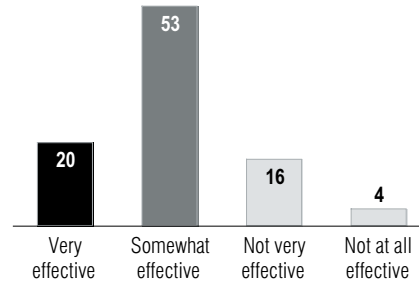
All residents participating in the survey were given a brief description of the purpose of air quality advisories (to inform people about the health impacts associated with air pollution and recommended ways to limit exposure) and then asked how effective they believe current advisories are in promoting this objective.

Greater Toronto Area residents are generally positive about the effectiveness of local air quality advisories, although few feel strongly about this. More than seven in ten believe such advisories are at least somewhat effective in helping people to reduce exposure to air pollution, but of this group only 20 percent say they are “very” effective. (Q.30)

Views on effectiveness are similar across the population, but are somewhat higher among women, residents 45 to 59 years of age and, not surprisingly, those who look for the AQI information and act on it.

When those who find air quality advisories to be not very or not at all effective were asked why they hold this view, they are most likely to say this is because people don’t take them seriously (32% of this group), because people have no choice about this and cannot change their patterns (21%), because people are not likely to change (20%) or because they are unaware of this information (13%). (Q.31)

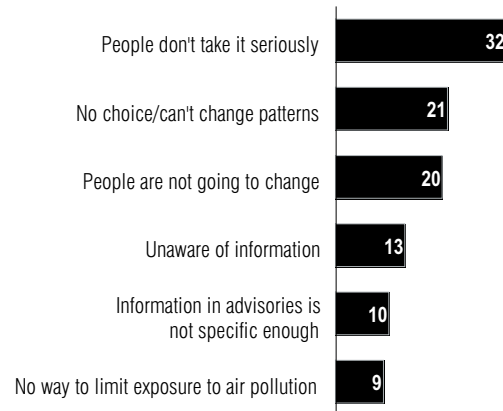
## Effectiveness of advisories in helping people reduce exposure to air pollution Greater Toronto Area



### Q.30

*One purpose of air quality advisories is to tell people about the health impacts associated with air pollution, and to recommend how people can limit their exposure. Do you feel these types of advisories are very, somewhat, not very or not at all effective in helping people to reduce their exposure to air pollution?*

## Why AQI information isn't effective in helping people reduce exposure to air pollution Greater Toronto Area Top mentions



### Q.31

*Why do you feel this type of information is not very effective in helping people in this way?*

*Subsample: Those who think it is not very/not at all effective (n=82)*



*GTA area residents place considerable importance in each of four types of air quality information. The greatest interest is expressed in learning to reduce their contribution to the problem, while there is comparatively less interest in knowing the current AQI.*

Residents were asked to rate the level of importance they and others in their household would place on receiving each of four specific types of air pollution advisory information. All four types were seen as being at least somewhat important by more than eight in ten residents, although not all are as equally likely to be seen as “very” important (the category that most accurately measures true interest). (Q.32a-d)

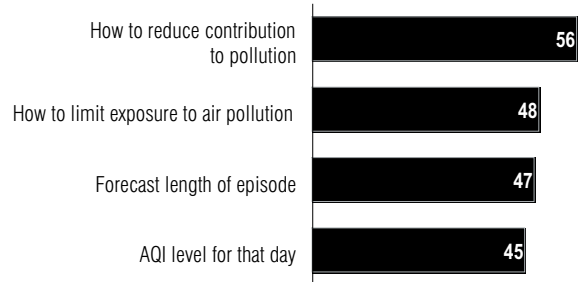
Residents are most likely to consider as very important air quality information on “what you can do to reduce your own contribution to local air pollution” (56%), with only somewhat fewer assigning this same level of priority to “how to limit your exposure to air pollution” (48%) and “the forecast of how long the poor air quality episode is supposed to last” (47%).

Slightly fewer (45%) say it is very important for them to receive air quality information on “the air quality index of level of pollution for that day.”

Across the four types of information, strong interest tends to be more widely expressed by women, residents in households with children under 16 years of age, those sensitized to air quality problems, and those most attentive and responsive to air quality advisories.

### Importance of various types of air pollution advisory information

Greater Toronto Area Very important



#### Q.32a-d

*And would you say it is very, somewhat, not very or not at all important for you or others in your household to receive each of the following types of air pollution advisory information ... The Air Quality Index or level of pollution for that day ... The forecast of how long the poor air quality episode is supposed to last ... How to limit your exposure to air pollution ... What you can do to reduce your own contribution to local air pollution?*



## MONTREAL ISLAND – MAIN FINDINGS

### General perceptions of local air quality and health hazards

*Montreal Island residents are divided on general air quality conditions in their community, and many considered it to be worse during the recent episode.*

Montreal Island residents are somewhat mixed about the quality of the air in their community. Just under four in ten rate it to be excellent (4%) or good (33%), while just over four in ten (43%) rate it to be only fair, and less than two in ten (18%) rate it to be poor. (Q.1)

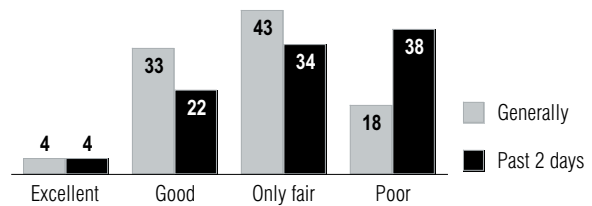
Many residents considered the local air quality to be worse than normal during the recent air quality episode, with nearly four in ten (38%) rating the air quality as poor during this period. (Q.2)<sup>4</sup>

While air quality was more likely to be rated poorly during this episode, most residents did not consider it to be significantly worse than what they believe to be normal air quality conditions in their area. A majority (55%) of residents rated conditions during the recent episode to be the same level as what they consider normal, while very few (5%) indicated they thought conditions were noticeably worse than the norm (i.e. rating it more than one scale point worse than their assessment of the typical air quality).

There are no age differences in terms of the quality of the air during the recent episode; however residents aged 18 to 29 are more likely to rate the general air quality in their community as fair or poor.

Francophones are clearly more likely to rate the air quality as fair or poor compared to those whose first language was English or something else.

### Perception of local air quality Montreal Island



#### Q.1

*How would you rate the quality of the air in your community, that is, the presence or absence of pollution? Is it generally ...?*

#### Q.2

*And how would you rate the air quality in your community over the past couple of days? Has it been ...?*

As might be expected, perceptions of air quality during the recent episode can be strongly predicted by residents' assessment of the general conditions:

- Among those who believe air quality in their area is generally *excellent to good*, 58 percent gave a similar rating during the episode, compared with only 12 percent who rated it as poor.
- Among those who believe air quality is generally fair to poor, almost everyone rated air quality during this recent episode as the same, with 54 percent saying it is poor.
- Residents with *fair to poor* health or health problems in the household were somewhat more likely to rate air quality as fair to poor both generally and during the recent episode.

<sup>4</sup> In the two or three days preceding this survey, AQI levels were the highest recorded in Montreal history, with readings of over 100.

*Most Montreal Island residents believe that local air pollution presents some degree of hazard to people living in the area, with nearly two in ten defining this threat as “very serious.”*

Nearly all residents believe local air quality conditions pose at least some degree of hazard to the health of people living in the area. A minority (18%) consider this threat to be “very serious,” while half (50%) consider it to be “somewhat serious,” and another 23 percent rate the risk as “not serious.” (Q.3)

Perceptions of the local air quality hazard as very serious are more likely among those who rate the local air quality as fair to poor.

*Montreal Island residents have a variety of ideas about how to reduce personal exposure to air pollution, but are most likely to mention staying indoors.*

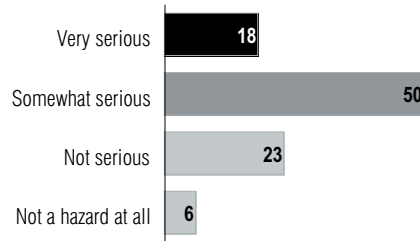
When asked (unprompted) how people can limit their exposure to air pollution and its harmful health effects, most residents are able identify at least one action they can take, but none is identified by more than one-third of the population. (Q.22)

Residents are most likely to say they can protect their health by staying indoors (33%), with fewer mentioning limiting activities during and advisory (10%), moving to the country (10%), changing driving habits (8%) and avoiding high traffic areas (8%). A number of other types of action are identified, but none by more than six percent of the population. Close to one in four believe either there is no way to limit personal exposure to air pollution (10%) or could not offer a meaningful response to the question (14%).

Responses to this question are generally similar across the population, but with some modest variations:

- Better educated residents are more likely to recommend moving to the country,
- Allophones are more likely to suggest avoiding high traffic areas.

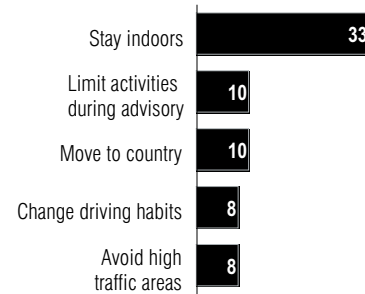
### Air pollution as hazard to health Montreal Island



#### Q.3

*How much of a hazard do you believe air pollution presents to the health of people living in your area? Does it present ...?*

### How to limit exposure to air pollution/ health effects Montreal Island Top 5 mentions



#### Q.22

*Air pollution can cause health problems among both healthy people and those with heart or lung illnesses. What, if anything, do you believe people can do to limit their exposure to air pollution and its harmful health effects?*

## Recall of the recent air quality advisory

*Six in ten Montreal Island residents are aware of the recent air quality advisory.*

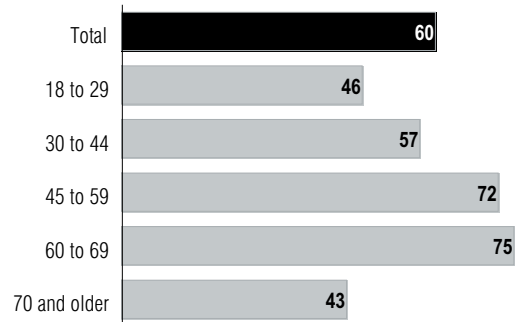
The air quality episode that preceded this survey was the worst ever recorded in Montreal, with levels of over 100 on the Air Quality Index, and because such episodes are less common in winter, attracted a lot of media attention.

Similar to the results in the Fraser Valley, six in ten (60%) residents say they recall seeing or hearing announcements or information about poor air quality in their area over the previous few days (during which the advisory was in effect). Recall of the advisory varies somewhat across the population:

- Awareness is highest among residents aged 45 to 59 (72%) and 60 to 69 (75%), while lowest among those aged 70 and over (43%) and 18 to 29 (46%).
- Recall is substantially lower among Allophones (35%), compared to Anglophones (69%) and Francophones (67%).
- Recall is substantially greater among those who rate local air quality as fair to poor (67%), and those who consider poor air quality to pose a very serious hazard (71%).
- Recall is slightly greater among those who rate their personal health as excellent or very good. (Q.4)

Only one in ten (11%) of those residents who noticed the recent advisory reported that it was something they specifically were looking for; 88 percent indicated they just happened to see or hear it. Unlike for GTA and Fraser Valley residents, there does not appear to be a significant relationship among Montreal Island residents between looking for an air quality advisory and taking action (see p.51 later in this section). (Q.9)

## Recall of recent advisory Montreal Island By age



### Q.4

*Do you recall seeing or hearing any announcements or information about poor air quality in your area over the past couple of days?*

*Montreal Island residents are most likely to recall seeing something about the recent air quality episode on television.*

When asked where they recall seeing or hearing about the current air quality episode, residents are most likely to mention television (41%), almost twice as many as who identify radio (22%) and four times as many as who identify newspaper (10%) or outdoor electronic billboards (9%). Various other sources are each mentioned by small proportions of residents, such as friend/family member (3%). (Q.6)

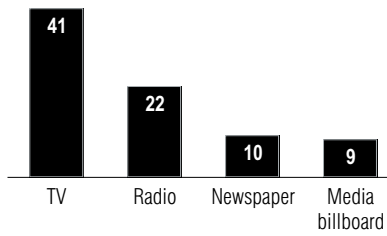
*Recall of specific messages of the advisory was limited, with most able to remember only the most general information about poor air quality.*

When Montreal Island residents are asked (unaided) about the main message of the air quality information they saw or heard, almost everyone could recall something, but most could not be any more specific than saying it was something about poor air quality (48%) or a smog alert (38%).

Comparatively few residents were able to recall seeing or hearing something more specific, such as the air quality index (9%), a request to reduce pollution-causing behaviour (6%), or the types of people affected by the poor air quality (5%). Only four percent were unable to provide a response to this question. (Q.5)

Few differences in recall of specific messages seem to be evident, although the small size of the subsample who recalled an advisory limits the conclusions. Anglophones, 18- to 29-year-olds, and those who are unfamiliar with the AQI are most likely to report hearing about a smog alert, while those with fair to poor health are most likely to recall hearing the types of people most affected by poor air quality.

Media source for recent advisory  
Montreal Island Top mentions

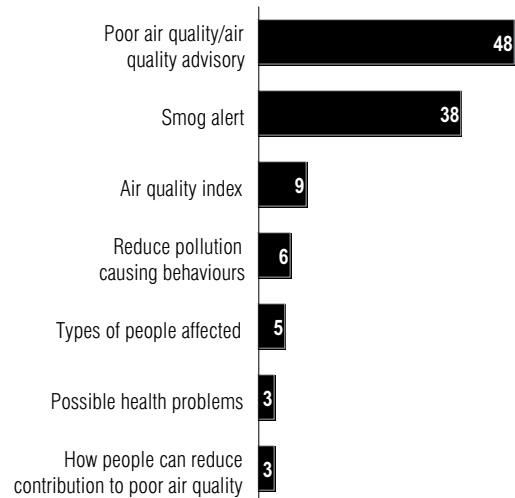


Q.6

*Where do you recall seeing or hearing this announcement about poor air quality?*

*Subsample: Those aware of recent advisory (n=239)*

Specific recall from advisory  
Montreal Island Top mentions



Q.5

*Can you tell me what it was that you recall hearing or seeing? Anything else?*

*Subsample: Those aware of recent advisory (n=239)*

*Fewer than two in ten Montreal Island residents could remember anything specific about the level of air quality reported during the recent advisory.*

Consistent with the non-specific recall of the recent air quality advisory, fewer than two in ten (17%) residents could remember anything about the specific level of air quality that was reported as part of the advisory. Although levels of higher than 100 were reached, only six percent recalled a level of 80 or higher. (Q.8)

About one in ten (11%) residents recall seeing or hearing something about a numerical scale, while six percent recall a verbal scale and no mentions were made of the colour scale.

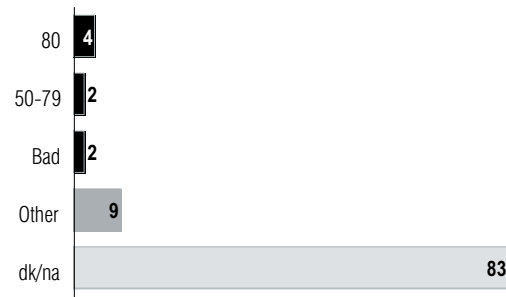
Recall of AQI levels during the air quality episode do not appear to vary by subgroups across the population.

*Less than one in five Montreal Island households who were aware of the recent advisory report to have experienced some type of physical or health problem they believe could be attributed to this episode.*

Among residents who recalled the recent advisory, close to one in five report that either they themselves (10%) or someone else in their household (7%) experienced some type of physical or health problems in the past couple of days which they believe might be attributed to the poor air quality episode. (Q.10)

Women and residents with fair to poor health status are more likely to report personal health impacts from the poor air quality in their community. Health impacts are also higher among those who rate the recent air quality as fair to poor, who feel air pollution is a very serious health hazard, and who changed their behaviour as a result of the advisory (e.g., sensitized to poor air quality conditions).

Recall of specific level of air quality  
Montreal Island

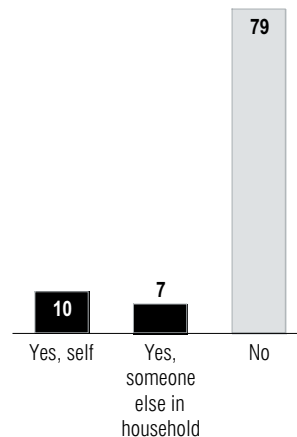


Q.8

*Do you recall the specific level of air quality reported in the recent advisory you saw or heard?*

*Subsample: Those aware of recent advisory (n=239)*

Experienced physical or health problems  
Montreal Island



Q.10

*Did you or someone else in your household experience any type of physical or health problems over the past couple of days that might be attributed to the current air quality?*

*Subsample: Those aware of recent advisory (n=239)*

## Response to the recent advisory

*Among Montreal Island residents aware of the advisory, more than six in ten discussed it with others such as friends, family members and colleagues.*

Although those who were aware of the recent advisory could recall few specific details, the episode did attract their attention sufficiently to discuss it with others. Of this group, just over six in ten (63%) report to have discussed the advisory with another person, such as a friend, family member or co-worker. (Q.11)

Such interactions are more commonly reported by residents aged 18 to 44, those with children under 16, and by those who are most sensitized to poor air quality (rate local conditions more negatively and believe air pollution is a serious health hazard).

*Most Montreal Island residents indicate that the air quality information they received through the advisory was at least generally useful.*

Those who recalled the recent advisory were mostly positive about the usefulness of the information it contained. Eight in ten residents rated the advisory information they saw or heard to be very (26%) or generally useful (54%), with only one in four indicating it was of little or no use. (Q.15)

This positive assessment of air quality information is evident across the population, but is clearly linked to residents' views of the current air quality conditions. The advisory information was most widely seen as useful by those who rate the current air quality more negatively, those familiar with the air quality index, and those who look for air quality information more frequently.

## Discussed advisory/poor air quality with others

Montreal Island By age



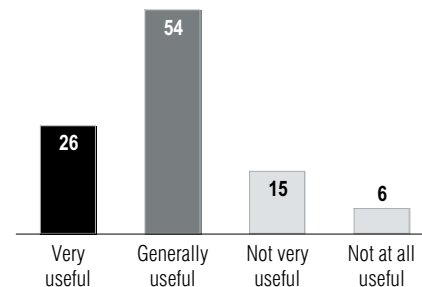
### Q.11

*Did you discuss this air quality advisory, or poor air quality, with anyone else that you know, such as friends, family members or co-workers?*

*Subsample: Those aware of recent advisory (n=239)*

## Usefulness of information in advisory

Montreal Island



### Q.15

*Overall, how useful did you find the information provided in the air quality advisory announcement you saw or heard? Was it very, generally, not very or not at all useful?*

*Subsample: Those aware of recent advisory (n=239)*

*Among those aware of the recent advisory, nearly one in four report that they or others in their household did something differently as a result of this information, most commonly reducing time spent outdoors or reducing the use of their car.*

Awareness and attention to air quality advisories is a critical first step, but the primary goal is to promote changes in behaviour that reduce exposure and/or personal contributions to poor air quality conditions. Such action was reported by a small proportion of Montreal Island residents.

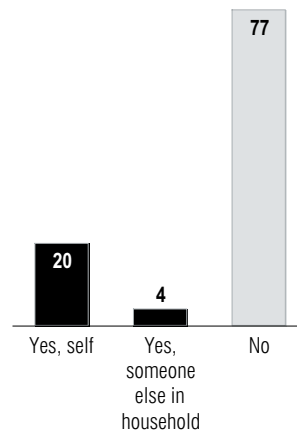
Among those recalling the advisory, one in four report that they themselves (20%) or someone else in their household (4%) did anything differently in response to the recent advisory (this represents 14% of all households in the area surveyed). (Q.12)

The most significant factors that appear to determine a behavioural response to the advisory is how frequently residents look for air quality information and how sensitized they are to air quality and its health effects.

- Those who look for air quality information frequently are twice as likely to report taking action as those who seek information only occasionally, and four times as likely as those who seek information rarely or never.

When this group was asked (unprompted) what types of actions they took in response to the recent advisory, the most common responses were to reduce time spent outdoors (35%) and reduce the use of their car (30%), followed by notifying others of the advisory (9%) and keeping windows closed (9%). (Note: these data are based on a small sample of only 54 respondents, and should therefore be interpreted with caution). (Q.13)

### Behaviour change in response to advisory Montreal Island

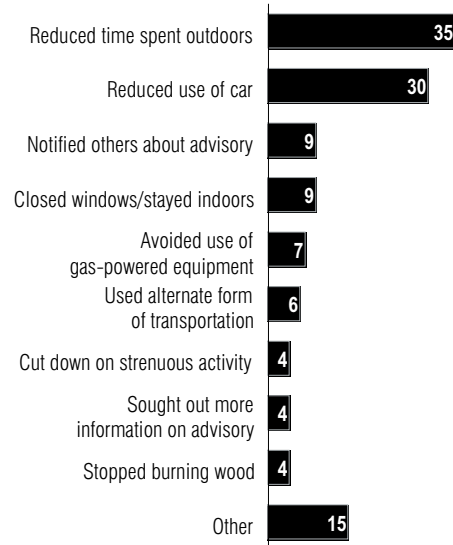


Q.12

*Did you, or someone else in your household, do anything differently as a result of this advisory?*

*Subsample: Those aware of recent advisory (n=239)*

### What people did differently because of advisory Montreal Island



Q.13

*What did you or the other person do in this case? Anything else?*

*Subsample: Those who did something differently as a result of advisory (n=54)*



*Montreal Island residents who did not do anything differently in response to the advisory say they felt they were unable to do anything or it did not apply to them.*

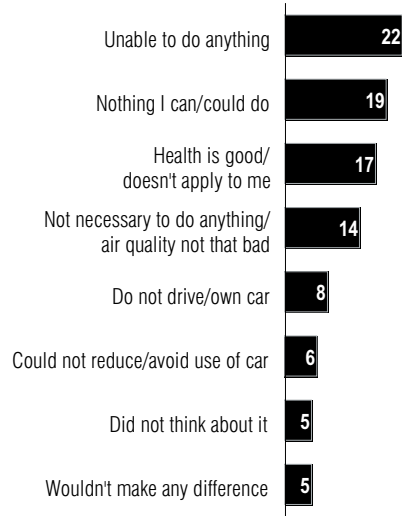
Residents give a number of reasons for not altering their behaviour in response to the recent air quality advisory, but mostly because they felt they were unable to do anything to help, or believe it did not apply to them.

Residents' belief that the air quality advisory did not apply to them was much lower in Montreal Island than levels recorded in the Fraser Valley and GTA surveys.

When asked (unaided) why they personally did not do anything differently as a result of hearing or seeing the advisory, residents are most likely to say they were unable to do anything (22%). Others give similar reasons about a lack of necessity for action, in terms of there being nothing they could do (19%), feeling their health is good so it did not apply to them (17%) or that the air quality is not that bad (14%). (Q.14)

Residents with fair to poor health status were more likely to say that they were unable to do anything.

Why personally did not do anything differently  
Montreal Island Top mentions



Q.14

*Why did you personally not do anything differently as a result of this advisory?*

*Subsample: Those who did not do anything differently as a result of advisory (n=185)*



## Recall of previous advisories

*Fewer than half of Montreal Island residents who were unaware of the recent advisory were able to recall such advisories over the past two years. Their responses to these events are similar to those who recalled the current advisory.*

Those residents who could not recall the recent air quality advisory were also asked whether they recall seeing or hearing about any such announcements in their area at any time in the past two years. Those who did were then asked several of the follow-up questions posed to those aware of the current advisory (as presented in previous sections of this report). Although recall of more distant events is typically not as accurate or meaningful, these questions were included in order to supplement the information collected on the recent advisory. Overall, the awareness, perceptions and actions of this group are generally consistent with those who recalled the current advisory.

Among residents who were not aware of the recent advisory, just over four in ten (43%) could recall such announcements in their area within the past two years. Such recall is higher among those with a college or university education, Francophones and those more sensitized to poor air quality. (Q.17)

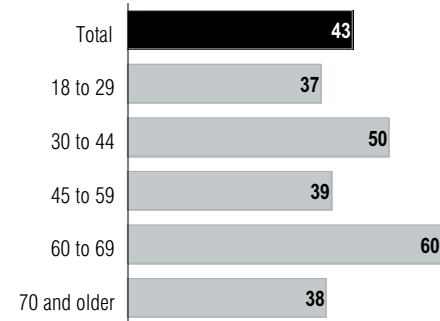
Consistent with the results among those aware of the current advisory, a minority of those recalling previous advisories report that they (13%) or someone else in their household (7%) experienced physical or health problems they feel could be linked to poor air quality in their community. (Q.18)

Among those recalling previous advisories, a net total of three in ten report that they themselves (22%) or someone else in their household (10%) did something differently as a result of the air quality advisory. Those reporting such actions were most likely to say they reduced time spent outdoors (25%) or reduced the use of their car (25%). (Note: these latter findings are based on a small sample of 20). (Q19-20).

As with those responding to the recent advisory, residents who chose not to do anything differently in response to past advisories explain this primarily in terms of saying there was nothing they could do (37%) or felt it was not necessary to do anything (27%). (Q.21)

## Any recall of previous advisories – past two years

Montreal Island By age



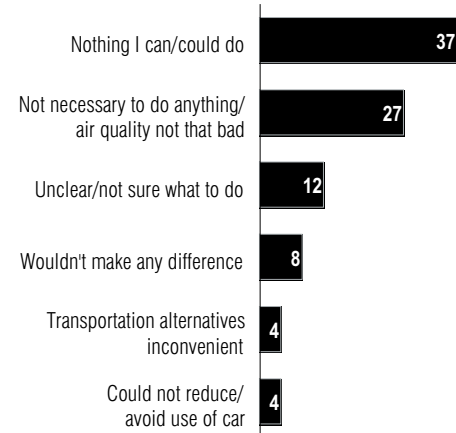
Q.17

*Do you recall seeing or hearing any announcements or information about poor air quality in your area at any time in the past two years?*

*Subsample: Those who do not recall recent advisory (n=161)*

## Reasons for no behaviour change after past advisories

Montreal Island Top mentions



Q.21

*Why did you personally not do anything differently after hearing an air quality advisory?*

*Subsample: Those who did not do anything differently as a result of past advisories (n=49)*

## Overall familiarity with the Air Quality Index (AQI)

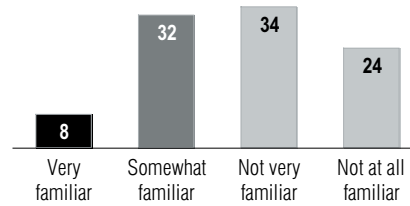
*The survey examined residents' familiarity with, and use of, the local air quality index currently in use on Montreal Island. These questions were asked of all residents, whether or not they recalled the current or previous advisories.*

Four in ten Montreal Island residents report to be at least somewhat familiar with the Air Quality Index currently broadcast through local media. However, relatively few in this group look for this information on a regular basis during the summer months

Four in ten residents report to be either very (8%) or somewhat (32%) familiar with the local Air Quality Index (AQI). This is lower than familiarity levels reported in both the GTA and B.C. Fraser Valley. Familiarity is higher among:

- Residents aged 45 to 69 and Francophones.
- Those with better health status, but also those with health problems in the household.
- Residents who are sensitized to local air quality, those who recall recent and past advisories, those who specifically look for the AQI and advisories, and those who took action during the recent episode. (Q.23)

## Familiarity with Air Quality Index Montreal Island



### Q.23

*Would you say you are very, somewhat, not very, or not at all familiar with something called the Air Quality Index for your area currently distributed through the media?*

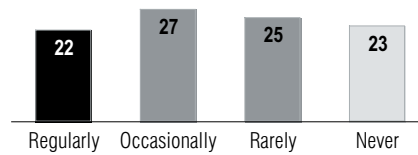
Although many residents have some familiarity with the local AQI, relatively few seek it out on a regular basis. Among those who have any familiarity (74% of residents), one in five (22%) say they look for AQI information on a regular basis during the summer months.<sup>5</sup> Results are fairly evenly split, with another one in four (27%) indicating they occasionally search for this information and the remaining half (48%) saying they do so rarely or never. (Q.24)

Regular use of AQI information is most likely to be among residents who:

- Are women
- Are under the age of 70, particularly those aged 60 to 69
- Are Allophones and Francophones
- Have two or more specific health problems in the household
- Are sensitized to poor air quality in their community
- Have specifically looked for the recent advisory and took action

Rare to no use of local AQI information is particularly high among residents aged 18 to 29.

Frequency of looking for AQI in summer  
Montreal Island



Q.24

*How frequently do you look for information on the current Air Quality Index during the summer months? Would it be ...?*

*Subsample: Those who are very/somewhat/not very familiar with AQI (n=297)*

<sup>5</sup> The question did not specifically ask about frequency of looking for AQI in the winter months since advisories are rare outside of the summer season.

*Montreal Island residents are most likely to look to TV when searching for air quality information for their area.*

Consistent with most Canadians' primary source of news and weather information, Montreal Island residents who are familiar with and look for air quality information are most apt to do so on TV (54%). Fewer look to newspapers (13%), radio (10%) or the Internet (9%). (Q.25)

TV is the principal media source for information across the population. Reliance on newspapers is more common among residents aged 45 to 59, Anglophones, and those with post-secondary education. Use of the Internet is more apt to be mentioned by men, residents aged 18 to 44, and those with a college education.

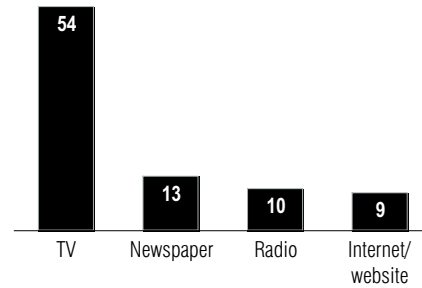
*Montreal Island residents are most familiar with the word scale format for the AQI compared with either the colour scale or the numeric scale. The word scale is also considered slightly more useful than the other two.*

The local area AQI is presented in three different formats (words, numbers, colours), but they are not all equally recognized by the local target audience. Among those who claim some familiarity with the AQI, residents are most likely to say they are familiar with the word scale (61%), followed by the colour (37%) and numeric scales (36%). (Q.26a-c)

The word scale is the most recognized across all population segments with the exception of those who specifically looked for the air quality advisory, who were most familiar with the colour scale. Particular formats are also more widely recognized by specific groups:

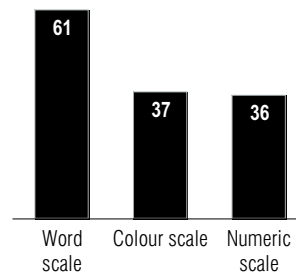
- The word format is more recognized among residents with post-secondary education and those with excellent health status.
- The numeric scale is more familiar among residents with a university education, those who are sensitized to poor air quality, and those who took action as a result of the recent advisory.

Media source for air quality information  
Montreal Island



Q.25  
And where are you most likely to look for Air Quality information? Anything else?  
Subsample: Those who look for information on AQI (n=226)

Familiar with AQI format  
Montreal Island



Q.26a-c  
The Air Quality Index is usually presented in three different formats. Which of these are you familiar with ...?  
Subsample: Those who are very/somewhat/not very familiar with AQI (n=297)

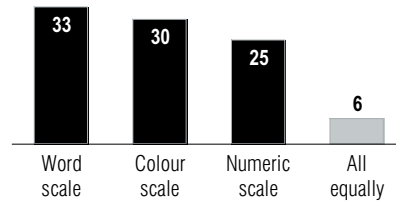
- The colour scale is more recognized among those aged 18 to 29 and 60 to 69, residents with less than a high school education, and those who are sensitized to poor air quality conditions.

Although the word format is the most widely recognized, all three scales are fairly close in terms of their perceived usefulness. When those residents familiar with more than one of the three formats were asked which one of them they find to be most useful, one third (33%) pick the word scale, followed closely by the colour scale (30%) and the numeric scale (25%). (Q.27)

The top choice varies across population segments:

- The word scale is most preferred format among college graduates and Anglophones.
- The colour scale is the preferred format among those with less than a high school education, and those who spend at least 4 hours per day outdoors.

### Most useful AQI format Montreal Island



Q.27

*And which of these formats do you personally find to be the most useful?*

*Subsample: Those who are familiar with more than one AQI format (n=126)*

### Perceived AQI threshold for health impacts

*Most residents say they would change their routines once air quality declined to the lowest level of the scale. But, beliefs about when health effects begin vary, with residents choosing the mid-level on the colour and word scales, and the highest level of the numeric scale.*

From a communications perspective, an important question is how citizens interpret the significance of the different levels of air quality reported in an air quality index: At what level would they be prompted to pay attention or change their behaviour? This issue was addressed briefly on the survey by presenting residents with the AQI format they are most familiar with, and asking them to indicate the level at which: a) they believe air quality begins to affect people’s health; and b) they would consider changing their routine.<sup>6</sup>

For the **word scale**, residents are somewhat divided on whether health effects from poor air quality begin when the AQI reaches “acceptable” (55%) or “bad/poor” (40%). However, there is stronger agreement that air quality would have to reach the “bad/poor” level before prompting them to think about changing their routine (71%). (Q.28a, 29a)

When asked about the **colour scale**, residents are similarly divided on whether negative health effects begin when the AQI reaches “yellow” (58%) or “red” (35%). However, residents wait longer to consider changing their routine, with one-third (34%) thinking “yellow” would be bad enough and one-half (50%) waiting until it reaches the “red” level. (Q.28c, 29c)

Of all the scales, those most familiar with the **numeric scale** are most likely to believe health effects begin at the highest level, and wait until that level to take action as well. Only one in four (27%) feel health effects begin when the AQI is in the 26 to 50 range, while close to half (45%) feel health effects begin above 50. Residents are slightly more likely to wait to take action until the level reaches above 50 (55%). (Q.28b, 29b)

### Threshold levels for AQI word, colour and numeric scales

#### Montreal Island

	LEVEL AT WHICH AIR QUALITY STARTS TO AFFECT PEOPLE’S HEALTH	LEVEL AT WHICH AIR QUALITY IS BAD ENOUGH FOR YOU TO CONSIDER CHANGING YOUR ROUTINE
<b>Word scale (N=107)</b>		
Good/bonne	4	2
Acceptable	55	23
Bad/poor/mauvaise	40	71
Other/don’t know	1	4
<b>Colour scale (N=62)</b>		
Green/vert	2	8
Yellow/jaune	58	34
Red/rouge	35	50
Other/don’t know	5	8
<b>Numeric scale (N=56)</b>		
0-25	9	5
26-50	27	20
51 plus	45	55
Other/don’t know	19	20

#### Q.28a-c

*Thinking about this {word/colour/numeric} scale, at which of the following levels do you think that air quality starts to affect people’s health ...?*

*Subsample: Those most familiar with the particular scale/those who think it is the most useful*

#### Q.29a-c

*And at what level of the Index do you consider the air quality to be bad enough to think about changing your routine?*

*Subsample: Those most familiar with the particular scale/those who think it is the most useful*

In all scales across all locations, residents generally need a higher AQI level to take action than the level at which they believe health effects begin. However, when thinking about the numeric scale, Montreal Island residents are more likely to say health effects begin at the 51+ level (45%) as compared to the GTA (32%).

<sup>6</sup> These findings are based on subgroups of the total sample based on respondents’ identification of a most familiar AQI format as follows: word scale: N=107; colour scale: N=62; numeric scale: N=56. These findings are based on small samples, but are essentially replicated in the post-season survey subsequently conducted with a nationally-representative sample of 1,500 Canadians in October-November 2004.

## Effectiveness of air quality advisories

*Montreal Island residents are divided on the effectiveness of air quality advisories in helping people to limit exposure to air pollution. Those who disagree do so mainly because they believe the information in advisories is not specific enough.*

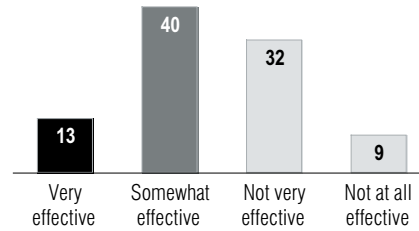
All residents participating in the survey were given a brief description of the purpose of air quality advisories (to inform people about the health impacts associated with air pollution and recommended ways to limit exposure) and then asked how effective they believe current advisories are in promoting this objective.

In contrast to B.C. and the GTA, Montreal Island residents are only slightly more positive than negative about the effectiveness of local air quality advisories in helping people to reduce exposure to air pollution. Just over half (53%) believe such advisories are at least somewhat effective in helping people to reduce exposure to air pollution, and only 13 percent feel they are “very” effective. (Q.30)

Views on effectiveness are fairly consistent across the population, but are somewhat higher among residents aged 60 and over, and among those who did something different as a result of the advisory. Effectiveness ratings are lower among Francophones.

Those who believe air quality advisories are not very or not at all effective were then asked why they hold this view. The most common response was that information in advisories is not specific enough (38%), or that people do not take them seriously (29%), people are not going to change (18%), or they have no choice and cannot change their patterns (9%). (Q.31)

## Effectiveness of advisories in helping people reduce exposure to air pollution Montreal Island

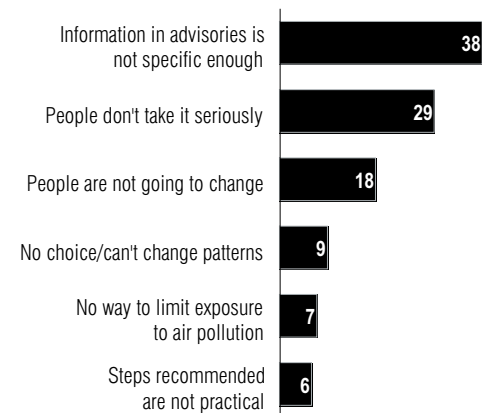


### Q.30

*One purpose of air quality advisories is to tell people about the health impacts associated with air pollution, and to recommend how people can limit their exposure. Do you feel these types of advisories are very, somewhat, not very or not at all effective in helping people to reduce their exposure to air pollution?*

## Why AQI information isn't effective in helping people reduce exposure to air pollution

### Montreal Top mentions



### Q.31

*Why do you feel this type of information is not very effective in helping people in this way?*

*Subsample: Those who think it is not very/not at all effective (n=164)*



*Montreal Island residents place considerable importance on receiving all four types of air quality information in an advisory. The most importance is placed on knowing how to reduce their contribution to the pollution problem, while getting the current AQI is a lower priority.*

Residents were asked to rate the level of importance they and others in their household would place on receiving each of four specific types of air pollution advisory information. All four types were seen as being at least somewhat important by more than eight in ten residents, although not all are as equally likely to be seen as “very” important (the category that most accurately measures true interest). (Q.32a-d)

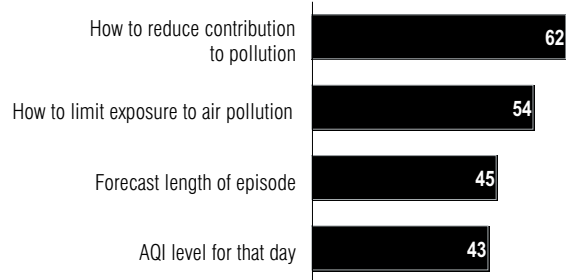
Residents are most likely to consider as very important information on “what you can do to reduce your own contribution to local air pollution” (62%), with only somewhat fewer assigning this same level of priority to “how to limit your exposure to air pollution” (54%). Montreal Island residents consider both of these types of information more important to receive than residents of B.C. and the GTA.

Fewer than half think that it is very important for them to receive information on “the forecast of how long the poor air quality episode is supposed to last” (45%) or “the air quality index or level of pollution for that day” (43%).

Across the four types of information, strong interest tends to be more widely expressed by residents who feel air pollution is a serious health hazard, those most attentive and responsive to air quality advisories, and those who spend more than six hours outdoors in an average day.

### Importance of various types of air pollution advisory information

Montreal Island Very important



#### Q.32a-d

*And would you say it is very, somewhat, not very or not at all important for you or others in your household to receive each of the following types of air pollution advisory information ... The Air Quality Index or level of pollution for that day ... The forecast of how long the poor air quality episode is supposed to last ... How to limit your exposure to air pollution ... What you can do to reduce your own contribution to local air pollution?*



## METHODOLOGY

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The findings are based on the results of interviews conducted by telephone with three samples:

- 400 adults in Abbotsford-Chilliwack, Hope and Langley, British Columbia conducted August 14 and 15, 2004
- 403 adults in the Greater Toronto Area, conducted August 28 and 29, 2004
- 400 adults on Montreal Island, conducted February 5 and 6, 2005

The margin of error for a sample of 400 in each city is +/- 4.9 percentage points, 19 times in 20. Margins are larger for demographic subgroups.

### Sample selection

In all three areas, the sample was designed to complete approximately 400 interviews. Environics uses a sampling method in which sample is generated using the RDD (random digit dialling) technique. Samples are generated using a database of active phone ranges. These ranges are made up of a series of contiguous blocks of 100 contiguous phone numbers and are revised three to four times per year after a thorough analysis of the most recent edition of an electronic phonebook. Each number generated is put through an appropriate series of validation procedures before it is retained as part of a sample.

Each number generated is looked up in a recent electronic phonebook database to retrieve geographic location, business indicator and “do not call” status. The postal code for listed numbers is verified for accuracy and compared against a list of valid codes for the sample stratum. Non-listed numbers are assigned a “most probable” postal code based on the data available for all listed numbers in the phone exchange. This sample selection technique ensures both unlisted numbers and numbers listed after the directory publication are included in the sample.

For these surveys, sample was drawn based on postal codes within the geographic boundaries of the three sample areas.

In each multi-person household contacted, respondents were screened for random selection using the “most recent birthday” method. The use of this technique produces results that are as valid and effective as enumerating all qualified persons within a household and selecting one randomly.

### Telephone interviewing

Interviewing was conducted at Environics’ central facilities in Toronto. Field supervisors were present at all times to ensure accurate interviewing and recording of responses. Ten percent of each interviewer’s work was unobtrusively monitored for quality control in accordance with the standards set out by the Canadian Association of Marketing Research Organizations. A minimum of five calls were made to a household before classifying it as a “no answer.”

## Completion results

	FRASER VALLEY B.C.		GREATER TORONTO AREA		MONTREAL ISLAND	
	N	%	N	%	N	%
A. Total sample dialled	7,871	100	9,996	100	5,434	100
Household not eligible	0	0	0	0	0	0
Non-residential/not in service	1,581	20	2,181	22	1,448	27
Language barrier	145	2	307	3	57	1
B. Subtotal	1,726	22	2,488	25	1,505	28
C. New base (A – B)	6,145	100	7,508	100	3,929	100
D. No answer/line busy/ not available	4,249	69	5,546	74	2,283	58
Refusals	1,482	24	1,541	21	1,235	31
Mid-interview refusals	14	*	18	*	11	*
E. Subtotal	5,745	94	7,105	95	3,529	90
Effective response rate						
F. Net completions (C – E)	400	7	403	5	400	10
Completion rate (F / [C – D])		21		21		24

\* Fewer than one percent

Note: Totals may not sum to 100 due to rounding

SECTION TWO:  
AUTUMN 2004 NATIONAL SURVEY



## INTRODUCTION

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The second phase of this research consists of a nationwide telephone survey of the Canadian population, conducted shortly after the summer period when there is the heaviest concentration of air quality episodes in most parts of the country.

This phase has two major objectives: first, to gain deeper insight into common perceptions and misperceptions about air quality and health that might provide valuable guidance in the development of more effective messages aimed at promoting behaviour change. Second, to evaluate Canadians' current use of the AQI and advisories to provide a basis for determining how to move forward with a new health-based index.

This research was guided by a "mental models" framework that was developed through a separate contract to Health Canada.<sup>1</sup> Where possible, survey questions were repeated from a previous Health Canada survey conducted by Environics in 2001, to identify how perceptions about air quality and health have evolved over the past three years.

The research consisted of telephone interviews conducted between October 25 and November 8, 2004, with a representative sample of 1,500 Canadians (18 years and older) living in areas served by air quality advisories and/or an air quality index.<sup>2</sup> The sample was stratified by region to ensure adequate subsamples for analysis in all regions, as well as the three metropolitan areas of Toronto (GTA), Montreal and Vancouver. A national sample of this size will provide results accurate to within plus or minus 2.5 percentage points in 19 out of 20 samples. A more detailed description of the methodology used to conduct this survey is provided at the end of this section, with a copy of the questionnaire included as an appendix.

This report begins with a summary of key findings and conclusions, followed by a detailed analysis of the survey data. Unless otherwise noted, all results are expressed as a percentage.

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1 A "mental models" framework refers to a conceptual approach to uncovering a target audiences' perceptions and misperceptions regarding a particular issue such as air quality that can then guide more effective communications. For more information see Morgan, M., et al. *Risk Communication: A Mental Models Approach*, 2002 (Cambridge).

2 Air quality advisories and/or indices are provided to all areas of the 10 provinces, except in Manitoba and Saskatchewan, where only the cities of Winnipeg, Regina and Saskatoon are covered.



## SUMMARY OF KEY FINDINGS

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The results of this study confirm that most Canadians understand, at a general level, that air pollution is a major environmental and health issue, and a majority have a basic awareness of air quality information provided in their area, in the form of an AQI or advisories. At the same time, the public has a limited and somewhat inaccurate understanding of air pollution and its impact on health, and tend to rely much more on what they can see and smell, rather than published air quality information, to determine when local conditions are bad and might require protective actions.

The following points summarize the main findings from the research, followed by broad conclusions and implications for the development of a new health-based air quality index.

### How Canadians define air pollution

At a general level, air pollution is widely recognized as a major environmental hazard, and one that evokes concern. Two-thirds (64%) of Canadians say they are very concerned about the quality of air, comparable to the level of concern about water quality and toxic chemicals in the environment, and above that expressed for such issues as climate change and depletion of the ozone layer. At the same time, the public is no more concerned about air quality than they were in 2001, and this issue appears to be one to which people have become to some degree acclimatized (that is, they acknowledge it but it is no longer as salient).

Most Canadians think of air pollution in relatively narrow terms, as coming chiefly from vehicle and factory/industry emissions, and therefore localized in nature. There is some recognition of local air quality being affected from distant regions (e.g. the U.S.), particularly in Atlantic Canada and Ontario, but this knowledge

does not appear to have much influence on how most people think about air pollution and its health implications. There is also clear evidence of confusion between the pollutant ground level ozone and the ozone layer in the stratosphere. The perspective of air pollution as largely local leads many to assume that air quality is invariably better in the suburbs than in the downtown core, and that it is better still in the country.

The public gives a somewhat mixed assessment of air quality conditions in their own community. Half (51%) rate conditions to be “good,” while most of the rest are evenly split between those who say it is either “excellent” (21%) or “only fair” (22%), and few (6%) consider it to be “poor.” There is a clear urban-rural difference in Canadians’ perceptions on this issue, but, while urban residents are much less likely to believe their air quality is excellent, they are only marginally more apt to say it is poor. Most (60%) people believe that the quality of their local air has remained largely stable over the past five years, and this view has strengthened since the question was posed in 2001.

Canadians rely primarily on their own sensory cues, rather than media advisories, to detect air pollution conditions. When asked how they can tell when the air is bad, a large majority say they know from what they see or smell or from their own health symptoms, compared with one-third who rely on weather or advisory forecasts (this tendency is evident everywhere except Quebec, where residents are more likely to depend upon advisories). The overall pattern is further confirmed by the finding that a clear majority of Canadians say they can identify poor air quality as soon as they step outdoors. This reliance on sensory cues is a significant factor in the lack of greater reliance on published AQI and advisories.

## Air pollution and health

Most Canadians acknowledge that air pollution has a significant impact on human health (56% say a great deal) and this has strengthened marginally over the past three years. Health impacts are largely seen in terms of asthma and other forms of respiratory illness, although a significant percentage would agree, when prompted, that air pollution might also contribute to cancer, heart disease and skin rashes. At the same time, Canadians tend to think about air pollution as having chronic rather than acute impacts on health, in large part because this is how respiratory illness tends to be viewed, and also in the absence of compelling evidence of significant acute impacts (e.g. deaths, heart attacks).

Almost everyone can readily identify types of people they believe are most at risk from the health effects of air pollution, and heading the list are the elderly (71%), and children or infants (58%), followed by others who have pre-existing health problems such as asthma (49%). Beyond these segments, however, very few tend to think about otherwise healthy people (like themselves) who simply face greater exposure to air pollution by nature of where they live or work, or who engage in strenuous activity.

While most Canadians understand that air pollution represents a significant health problem in general terms, there is a clear tendency to downplay the extent to which it affects them directly, a pattern that is evident even among those living in major urban centres. Very few (8%) believe that air pollution represents a serious health hazard in their community, rising to only 13 percent among Toronto residents. A notable minority (28%) of Canadians report that they or someone in their household has experienced some type of health impact from air pollution in the past two years (mostly in the form of asthma or other respiratory problem), but even among this group only 17 percent consider local air pollution to represent a serious hazard. This suggests that people view air pollution more as an aggravating factor to pre-existing problems than a major cause of illness.

The limited assessment of personal risk from local air pollution may be due in part to the fact that Canadians do not believe there is much they can easily do to

reduce such risks. At present, there is no widespread understanding of the appropriate protective actions to be taken when poor air pollution hits. In response to an unprompted question, people were most likely to say they could reduce their exposure by staying indoors (20%), getting out of polluted areas (14%) or wearing a mask (12%), and more than one in four Canadians could not identify any way to limit exposure. In response to prompted questions, perceptions about the localized nature of air pollution leads most to believe that getting away from urban areas or avoiding high traffic areas will be effective in reducing personal exposure.

But more surprisingly, relatively few place such effectiveness on staying indoors or avoiding strenuous exercise, this latter strategy being very poorly understood. Among those reporting health effects from pollution, more than half (58%) report taking some action in response, mostly by spending less time outdoors, using an air filter or purifier, or getting away from polluted areas.

## Air quality advisories and the AQI

There is reasonably broad, but far from universal, awareness of media-broadcast air quality information across the country. Six in ten (59%) Canadians can recall seeing or hearing such information at some point over the past three years, and almost half (48%) remember something within the past year. Similarly, six in ten claim to be somewhat (41%) if not very (19%) familiar with their local Air Quality Index (AQI).

But it is evident from the data that only a minority of Canadians are making use of this information on any kind of regular basis. Among those aware of the AQI, one in five (20%) say they use it frequently (up marginally from 2001), with more than twice as many (42%) indicating they never do. Most people will check their local AQI if and when concerned about pollution levels, but this appears to be secondary to other cues, such as how the air looks, ambient weather conditions, and whether or not they can feel it in their chest.

Those who do make use of the AQI tend to be most familiar and comfortable with the word scale version of the index (e.g. "good" to "poor"), particularly in



Ontario. Residents of Quebec and British Columbia are more apt to know the colour scale, while the numeric scale is most likely to be recognized in Toronto. The word scale may be popular because it offers the most intuitively obvious framework to make sense of differing levels of air quality (e.g., terms like “good” or “poor” fit most directly into people’s mental model of air quality).

In terms of how Canadians interpret the significance of the AQI levels from a health standpoint, the general tendency to believe that air pollution starts to affect health once the level drops below the most positive point on the scale (e.g. when the level declines from “good” to “fair”). This finding suggests that the public may either be drawing a threshold for health impacts, or assuming that the highest level on the scale indicates the absence of any pollutants.

When the focus shifts to people’s own health and when they should take protective action, there is a decided shift down at least one point down the scale; that is, Quebecers (for instance) are most likely to believe that health begins to be affected when the AQI is yellow, but say it would have to be red before they would be prompted to take action. This shift is evident across jurisdictions and scale formats, but is less pronounced with the colour scales, suggesting that the middle points in these scales (ie. orange, yellow) connote something more negative and therefore warranting attention, in comparison to the middle points on the word and numeric scales.

Canadians say they are interested in receiving, or having access to, more information about local air quality and pollution, but this appears to be a somewhat unfocused type of interest, as no specific type of information emerges as a clear priority. Roughly half of the population say they would find each of a number of types of information to be very useful, including what individuals can do to limit exposure (52%), the forecasted length of episodes (51%), the types of pollutants involved (51%), the AQI for the day (47%) and the potential health effects for that day (47%).

This lack of differentiation suggests that most people may simply have not had enough experience with

such information, nor given sufficient thought to what might be of greatest value to them, to be in a position to articulate their needs in a meaningful way. Canadians do express a clear preference for having air quality information available on a regular basis rather than only during bad air days, although this preference is not quite as strong as in 2001; but whether regular exposure to air quality information will prove more effective in capturing public attention and evoking protective actions when appropriate remains to be seen.

## How results vary across the population

At a broad level, the major findings from this study are applicable to Canadians across the country, as defined by region, demographic characteristics and health status. Results on given questions or issues, however, vary by population segment, in many cases in a predictable fashion (e.g. urban residents are less positive than their rural cousins about local air quality conditions).

Across issues, attention and concern about air quality issues tend to be greater in the major urban centres, notably Toronto, as well as among women and Canadians in the middle age brackets. It is these types of individuals who are most likely to make up the segment of those who are “sensitized” to local air quality issues (defined as those who rate local conditions negatively consider air pollution generally to be a serious hazard, have household health problems linked to air pollution and who are most apt to be familiar with the local AQI).

More surprisingly, reported health status and reported diagnosed respiratory illness appear to have only a minor influence on Canadians’ awareness and opinions about the AQI, air quality and its impact on health. But those who make a link between air pollution and their own health are clearly more sensitized to local air quality, and represent a core group of the most active users of AQI information.

In terms of household composition, the presence of children and/or seniors in the household do not emerge as factors that heighten the public’s level of attention or concern about air pollution generally or in the local community.

## Conclusions and implications

The current air quality indices are an established part of the public weather/environmental information landscape in most parts of Canada insofar as they are recognized by a majority of residents, particularly in areas with the poorest air quality conditions. But this information is not widely used nor well understood; for most Canadians, the local AQI is not eliciting the attention and response in the way it is intended.

The data suggest that the principal obstacle lies not in the indices themselves or the way in which they are reported, but in how individuals perceive air pollution as a phenomenon and a hazard. Most Canadians' understanding of air pollution has a basis in fact but is limited and, in some important ways, inaccurate (e.g. measured by what can be seen, on localized impacts). As humans, we are genetically programmed to rely on our senses to detect hazards, and our attention invariably over-emphasizes risks that are seen to be immediate, posing potentially serious if not fatal consequences, unfamiliar, and outside of our personal control; and conversely there is a strong tendency to under-emphasize those hazards judged to have the opposite characteristics.

Air pollution, as experienced by most Canadians, fits this latter category. The average individual – even those living in the most polluted parts of the country – has limited direct experience from which to conclude that air pollution is a clear and present hazard to their health in a way that requires protective actions. Those who can tell that poor air quality is affecting their health are more sensitized to the issue, but at the same time appear to de-emphasize its impact.

In the absence of such compelling evidence of harm, there is likely to be a strong tendency to unconsciously discount the personal hazard posed by poor air quality because the consequences of fully accepting this reality

could be significant (a process described by the term “cognitive dissonance”). These consequences might take one of two forms: a) the elevated stress that would result from more openly accepting that one's health is being damaged by the air itself; and b) the disruption in livelihood and lifestyle that would be required to significantly reduce or eliminate this hazard altogether. No wonder people might make cognitive adjustments that lead to minimizing their perception of the threat posed by this hazard. And this dynamic is by no means unique to air pollution, which is but one of numerous hazards that make up life in the 21st century. In this context, it is hardly surprising that many people devote limited attention to their local AQI.

The key to implementing a more effective public advisory system for air quality may lie in first changing Canadians' perception of air pollution as something they can easily detect on their own, through sight, smell or personal health symptoms. The goal would be to establish a more accurate public conception of air pollution in today's world as something that is often invisible, widely dispersed, a hazard even at low levels, and not contingent on particular weather patterns, thereby establishing the need for an external source of information by which to broadcast its presence at the local level. Analogous situations can be found with the hazards posed by exposure to ultra violet radiation and winter wind, two examples in which an index of exposure has been successfully introduced into widespread public use.

This approach would entail first creating a greater public demand for an accurate indicator of local air quality conditions, which would then be addressed through the implementation of a new, health-based AQI. The results of this research would indicate that no type of revised AQI will attract the necessary public attention and achieve its health promotion objectives if does not fill a well-established need for such information.

## GENERAL PERCEPTIONS ABOUT AIR QUALITY

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### General concerns about air quality

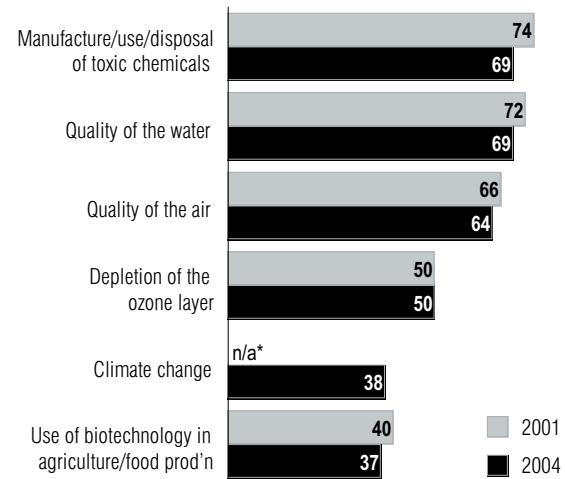
*Two-thirds of Canadians say they are very concerned about air quality today, essentially unchanged since 2001. This issue evokes less concern than toxic chemicals and water quality, but greater concern than ozone depletion, climate change and biotechnology.*

The survey began asking Canadians about the degree of concern they currently have about a number of general environmental issues, in order to place air quality in a broader context. As before, most Canadians are at least somewhat concerned about all of the issues presented, and the degree of expressed concern in each case has changed remarkably little over the past three years. Two-thirds (64%) say they are very concerned about the quality of the air (down two percentage points since 2001), close behind toxic chemicals and water quality, but well ahead of depletion of the ozone layer, climate change and use of biotechnology.

General concern about air quality is evident across the population and does not appear to be determined strongly by demographic, community or health-related characteristics. As in 2001, however, strong concern is somewhat more likely to be expressed by residents of Toronto, women and Canadians 45 to 59 years of age, while least apparent among residents of the Prairie centres of Winnipeg, Saskatoon and Regina (a similar pattern appears with each of the other environmental issues presented). Since 2001, the most notable shifts in concern about air quality have been an increase in strong concern in Atlantic Canada (67%, up 10 points) and a decline in Quebec (60%, down 13).

### Concern about environmental issues

Very concerned 2001-2004



\* Not asked in 2001

#### Q.1

*Are you very, somewhat, not very or not at all concerned about each of the following ... The manufacture, use and disposal of toxic chemicals ... The quality of the air ... The quality of the water ... The depletion of the ozone layer ... The use of biotechnology in agriculture and food production ... Climate change?*

The strongest degree of concern about air quality is expressed by those Canadians who appear to be the most “sensitized” to air quality issues, as defined by other measures on the survey such as a negative assessment of local air quality, perceptions of air quality posing a significant health hazard, reporting self or household health effects from local air pollution, and familiarity with the local air quality index (AQI).<sup>3</sup> At the same time, these same individuals are also the ones most likely to express strong concern about each of the other environmental issues presented, suggesting that their sensitivity may be more broadly focused than on air quality alone.

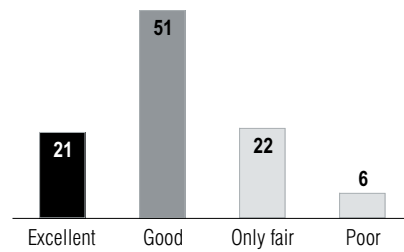
### Assessment of local air quality

*Canadians give a mixed assessment of their local air quality, with the worst ratings given by Toronto and Montreal residents. A majority believe local conditions have not changed over the past five years, but three in ten say they have become worse.*

Canadians were asked to rate the quality of the air in their local community, and most are positive rather than negative, with seven in ten indicating it is excellent (21%) or good (51%), compared with only six percent who say their local air quality is poor.

Consistent with actual conditions, public perceptions of air quality are noticeably worse in urban areas, in particular the Greater Toronto Area and Montreal, where just over half of residents rate the quality to be excellent or good (although no more than one in ten in either centre say it is poor). Vancouver residents are significantly more positive about their environment, but the most positive assessments are given by Canadians living in rural communities (less than 5,000 in population), where close to nine in ten say their local air quality is excellent (41%) or good (47%).

### Perception of local air quality 2004



Q.2

*How would you rate the quality of the air in your community ...?*

### Perception of local air quality By community size 2004

	EXCELLENT	GOOD	ONLY FAIR	POOR
<b>Canada</b>	<b>21</b>	<b>51</b>	<b>22</b>	<b>6</b>
Vancouver	14	57	26	2
Toronto	11	42	35	10
Montreal	7	46	36	9
100,000 to 1 million	20	58	16	6
5,000 to 100,000	22	50	21	7
Less than 5,000	41	47	10	1

Q.2

*How would you rate the quality of the air in your community ...?*

3 Canadians reporting health effects (for themselves or a household member) from air pollution (not necessarily diagnosed by a health professional) are more likely than others to express strong concern about each of the environmental issues listed. But unlike in 2001, the current survey did not find a similarly strong relationship with self-reports of a diagnosed respiratory illness. A modest link appears with strong concerns about water quality, but only marginally with respect to air quality (69% of those reporting a diagnosed respiratory illness, versus 63% of the remaining sample).

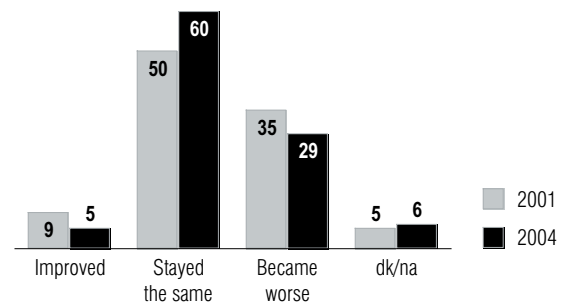
Perceptions of local air quality are not strongly determined by demographic factors, but are clearly influenced by health status generally, as well as sensitivity to air pollution and its perceived impact on personal and household health. For instance, fair to poor ratings of local conditions are identified by significant proportions of Canadians who report a poor state of health (41%) and those who believe air pollution represents a very serious health hazard (60%).

Current conditions are important, but also relevant is the perceived trend – is local air quality seen to be getting better or worse? Overall, a majority (60%) of Canadians believe that local air quality conditions today are about the same as they were five years ago, and this view has strengthened since 2001 (up 10 percentage points). Among the remainder, however, residents continue to be much more likely to say that conditions have become worse (29%) than improved (5%).

Predictably, perceptions of change in air quality conditions are closely tied to how residents view current conditions. Perceptions of deteriorating local conditions are much more common among those who rate their current local air quality as fair to poor (50%), compared with those who rate current conditions to be either good (26%) or excellent (9%).

A stable trend is the majority view in every region of the country, but deteriorating conditions are most apt to be reported by residents of Toronto (44%) and Vancouver (36%). As in 2001, Montrealers (24%) (and Quebec residents generally – 19%) are noticeably less negative about the change in local air quality over the past five years. As with their assessment of current conditions, those Canadians most sensitized to air quality issues are among the most negative about the five-year trend.

Change in local air quality  
Past five years 2001-2004



Q.4

*Would you say that the air quality in your community has improved, stayed the same or become worse in the last five years?*

*Note: Question wording revised from 2001, which asked about "air pollution" instead of "air quality"*

## Conceptions of air quality and smog

*Canadians generally associate the terms “air quality” and “smog” with air pollution generally, and specifically from vehicles and industry. Very few spontaneously associate either term with health effects of exposure to poor air quality.*

The survey probed the public’s conception of the terms “air quality” and “smog” in order to gain insight into what people associate with these terms, by asking respondents what they think they usually refer to (without the benefit of prompted response categories). Of particular interest was the extent to which the associations with each of these terms would be similar or different.<sup>4</sup>

The results show that both terms are generally associated with air pollution generally, and most commonly pollution from vehicles and industry. Fewer than one in ten Canadians spontaneously think of health effects in relation to either term.

**Air quality.** When Canadians hear the term “air quality” a number of associations come to mind, but the most common are the generic terms smog (24%), air pollution (23%), and vehicle exhaust or emissions (20%), followed by industry, outdoor air quality, the amount of pollutants, health effects of breathing bad air, and a number of other things that are each mentioned by no more than six percent of the population.

Across the population, smog is most likely associated with air quality among those living outside of Quebec, particularly in the Greater Toronto Area (40%), whereas Quebecers are most likely to think of “pollution” generally (36%). Association with health effects is not common in any group, but is most evident among residents of Vancouver (12%), Canadians aged 60 years and older (11%), and those who believe air pollution poses a very serious hazard to health (11%).

**Smog.** When asked about “smog,” Canadians first association is vehicle exhaust or emissions (31%), followed by industry (25%), pollution (25%), and outdoor air

## Top-of-mind associations with “air quality” and “smog”

Top combined mentions 2004

	AIR QUALITY N=716	SMOG N=784
Smog	24	na
Pollution	23	25
Vehicle exhaust/emissions	20	31
Industry	16	25
Outdoor air quality	15	12
Cities/urban areas	–	8
Amount of pollutants	12	3
Air pollution/bad air	–	7
Health effects of breathing air	7	5
Carbon monoxide/gases	8	6
Toxins/chemicals in the air	6	3
Particulates	6	4
Ability to breathe	5	–
Exhaust	3	6
Fog	–	5
Smoke	2	5

### Q.5

*When you hear the term {air quality/smog} what do you think this usually refers to?*

*Subsample: Each asked of half of the respondents*

quality (12%), with no other response given by more than eight percent (only five percent mention health effects).

These associations are largely consistent in Ontario and western Canada, and to a lesser extent in Atlantic Canada, where residents give comparatively greater mention to cities/urban areas, fog, health effects of breathing poor air, and smoke. In Quebec, most residents associate “smog” with pollution, with few making specific reference to vehicle emissions or industry. No more than 10 percent in any identifiable group specifically identified health effects when asked about their associations with term “smog.”

<sup>4</sup> Each respondent was only asked about one of these terms (through random assignment), since responses to one term would likely prompt and influence responses to the second. The results for each term are based on one-half of the survey sample.



## Primary sources of local air pollution

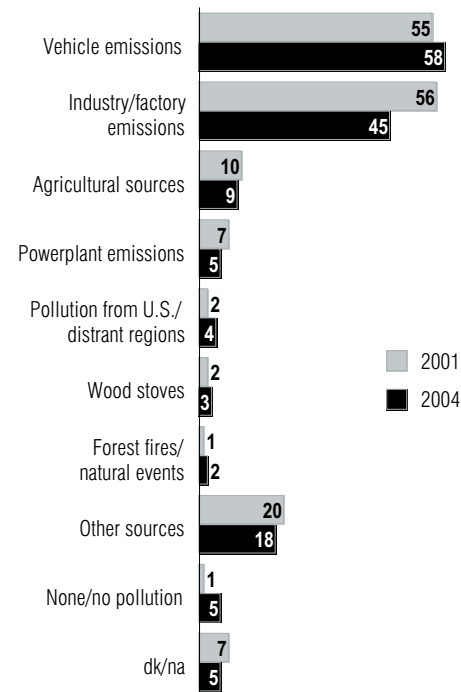
*The public believes most air pollution comes from vehicle and factory emissions. Western Canadians attribute their air pollution mostly to local sources, while those living in the east are more divided in whether their area is affected more by local or distant sources.*

Canadians were asked about their knowledge of the major sources of air pollution in their local community. As in 2001, most say that poor air quality is the result of emissions from vehicles (58%) and/or industry/factories (45%) (multiple responses were permitted). Over the past three years, however, the trend has been toward a greater emphasis on mobile over point sources. Beyond these two principal sources of local air pollution, few identify other causes of local air pollution, with no more than one in ten Canadians mentioning agriculture, power plants, U.S. sources or wood stoves. Only five percent of the population is unable to offer any meaningful response to this question.

Vehicle emissions is the most commonly identified local source of air pollution in urban areas of the country, particularly in Vancouver (84%) and Toronto (77%), while given less emphasis in Atlantic Canada and rural communities (where more than one in ten insist there is *no air pollution* in their area). The growth in focus on vehicle pollutants since 2001 is most evident in larger urban areas, but also in the Prairie centres, as well as in Quebec and among Canadians under 45 years of age.

Focus on industry and factory emissions has declined in all regions of the country since 2001, but most noticeably in Quebec, Alberta and B.C. This type of local air pollution source is most likely to be identified by residents of Toronto (49%), those living in communities of 5,000 to 100,000 (51%), those who have children under 16 or adults aged 65 and older at home, and those most sensitized to local air quality issues.

## Primary sources of local air pollution 2001-2004



### Q.8

*As far as you know, what are the major sources of air pollution in your area? Any others?*

Agricultural sources of local pollution are most apt to be identified in rural communities (19%), and in the Prairie cities, but over the past three years have declined in the latter (to 17%, down 9) and B.C. (to 6%, down 9), while rising in Alberta (to 14%, up 5).

Those who can identify at least one source of local air pollution (90% of the population) were also asked if they believe that this pollution is generated mostly from sources in or near their community, or from distant regions. Over half (54%) believe that air pollution in their community comes mostly from local sources, compared with one in three (33%) who look to distant sources. One in ten (10%) believe both types of sources are equally affecting air quality in their area.

Perceptions on this question appear to be defined largely by region, consistent with the actual pattern of long range pollutants across North America. In western Canada, clear majorities say local air pollution is generated mostly from local sources, although approximately three in ten also attribute some contribution from distant sources. In Ontario and Quebec, the balance is toward local sources, but almost as many identify distant sources as either primarily or equally responsible. Atlantic Canadians are more likely to believe their air quality is affected more by distant than local sources.

Size of community of residence also influences perceptions on this issue to some degree. Local sources are more common among urban centres, but this is actually more apt to be reported by residents of cities of 100,000 to one million in population (63%) than among those living in the country's largest urban centres that exceed one million (56%). The propensity to identify local pollution as coming mostly from distant sources increases from 27 percent among those in the major urban centres, to 48 percent among rural residents.

## Where local air pollution is generated

By region 2004

	IN OR NEAR LOCAL COMMUNITY	FROM DISTANT REGIONS	EQUALLY FROM LOCAL AND DISTANT REGIONS
<b>Canada</b>	<b>54</b>	<b>33</b>	<b>10</b>
Atlantic	42	47	9
Quebec	53	28	15
Ontario	47	39	11
Saskatchewan/Manitoba	70	20	7
Alberta	67	27	5
B.C.	67	26	5

### Q.9

*Would you say the air pollution in your area comes mostly from sources ...?*

*Subsample: Those who are aware of major sources of air pollution in their area (n=1,353)*



## Basis for identifying poor air quality

*Canadians rely primarily on their own sensory capacities rather than media advisories to detect poor air quality in their community, using visual and olfactory cues, as well as health symptoms. Almost six in ten believe they can tell bad air just by stepping outside.*

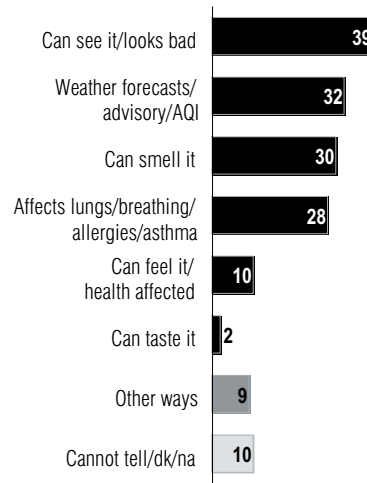
The public's assessment of local air quality (and their response to hazardous levels) depends in large part on how they can tell when conditions are poor. When asked (unprompted) how they know when the air quality in their area is poor, Canadians are most likely to say they rely on visual cues to tell them when the air in their community is polluted (mentioned by 39%), with three in ten (30%) indicating they can smell it, and a small percentage (2%) reporting they can taste it. Close to four in ten say they know when the air is bad because it affects their breathing or respiratory function (including asthma) (28%) or affects their health in some other way (e.g. eye irritation) (10%).

By comparison, one in three (32%) say they know when the air is bad from local area weather forecasts or reports, with but a handful of this group specifically mentioning advisories (5%) or an AQI (2%). One in ten (10%) Canadians acknowledge that they cannot tell when there is poor air quality in their area (principally among those who do not have a high school diploma – 23%).

The reported basis for detecting poor air quality is largely similar across the country, with a few notable variations. Visual cues are most widely mentioned by residents of Vancouver (65%) and those with a university degree (46%), while least evident in Quebec (13%), where reliance on media reports and advisories is most common (45%). Identification of bad air quality as a result of aggravated respiratory symptoms is most likely to be reported in Toronto (43%) and among Canadians with a diagnosed respiratory illness (44%).

The public's reliance on sensory cues for identifying poor air quality is further confirmed by the finding that among Canadians who say they can tell when local air quality is bad (90% of the population), two-thirds (64%) believe they can detect this on their own as soon as they step out of doors, and without the benefit of a local weather forecast (this translates into 58% of all Canadians surveyed). This belief is the majority view

## How you know when the air is bad 2004

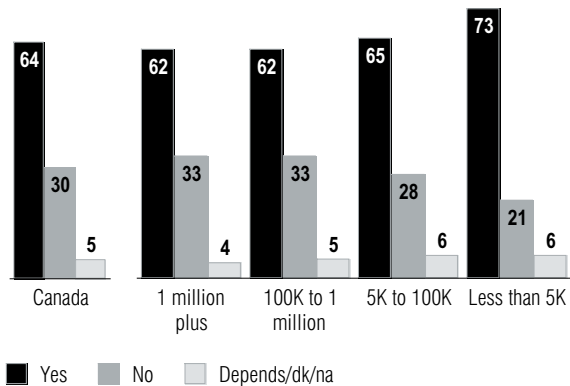


Q.6

*How would you know when the air quality in your area is poor? Anything else?*

## Can you identify poor air quality just by stepping outside?

By community size 2004



Q.7

*Without the benefit of a local weather forecast, would you be able to tell on your own that the air quality is poor as soon as you step out of doors?*

*Subsample: Those who know when the air quality in their area is poor (n=1,358)*

across the population, but most widespread among rural residents, those without a high school diploma, Canadians aged 45 and older and among those who have the poorest health status. This view is least apt to be shared by Vancouver residents (53%).



## PERCEIVED DETERMINANTS OF AIR QUALITY

One of the objectives of this research is to identify public perceptions (and misperceptions) about the factors that determine or influence air quality. Such perceptions are likely to have important implications for identifying how best to develop new communications messaging intended to promote public awareness and action in response to air quality advisories.

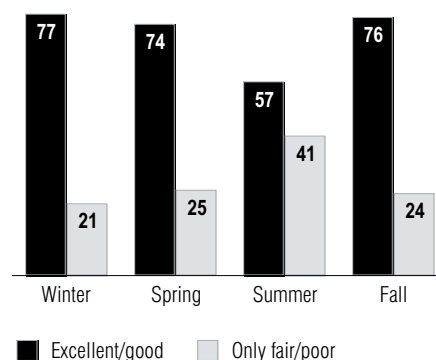
### Seasonal influence on air quality

*Canadians are more likely to rate local air quality as only fair to poor during the summer months than during the other three seasons, with this difference most noticeable between urban and rural residents.*

Canadians provided an overall assessment of local air quality conditions (see previously), but to what extent do they believe this varies by season? Results from the survey reveal that many do in fact make a distinction when specifically prompted on this question, but primarily between summer and the other three seasons. Overall, three-quarters rate local air quality as excellent or good during the winter, spring and fall months, similar to their general assessment provided earlier on the survey. By comparison, fewer than six in ten believe their local air quality is excellent or good during the summer.

As might be expected, the sharpest regional differences on assessments of local air quality conditions appear with ratings of typical summer conditions. Excellent or good summer air quality is reported by a large majority of those living in Winnipeg/Regina/Saskatoon (85%) and Alberta (80%), as well as among rural residents (79%), but by fewer than half of those in Ontario (45%) (and only 34% in Toronto) and in the country's three major urban centres (39%). Similar but less significant regional differences are apparent on local air quality ratings for the other three seasons.

Perception of local air quality  
By season 2004



Q.3

*And how would you rate the quality of the air in your community in each of the four seasons, starting with ...?*

## Impact of weather conditions on air quality

*A strong majority of Canadians believe that air quality in their area is influenced to some degree by humidity and temperature, and to a lesser extent by cloud cover.*

Do Canadians believe that local air quality is determined in part by specific types of weather conditions? Results indicate that most do in fact believe that conditions such as humidity and temperature have an influence on air quality.

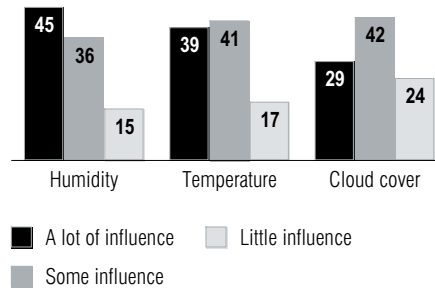
**Humidity.** Perhaps because high levels of humidity often accompany poor air quality conditions in the eastern part of the country, many Canadians believe that humidity contributes to such pollution. Close to half nationally believe that humidity as “a lot of influence” on determining air quality in their area, while another third (36%) say it has some influence (one percent volunteer that it has no effect on air quality whatsoever).

Predictably, the perceived impact of humidity is more widespread in eastern Canada, particularly in Ontario (61% say a lot of confidence), although it seen as having at least some influence by a strong majority of those living in western Canada as well. Humidity is also more likely to be ascribed importance by women and Canadians sensitized to air quality issues.

**Temperature.** High temperatures are also common during poor air quality episodes, and so, not surprisingly, most Canadians say that temperature has a lot of influence (39%) or some influence (41%) on local air quality. Temperature is most widely seen as having an important role by residents in Ontario (46%) and the country’s major urban centres (43%), as well as by those sensitized to air quality issues.

**Cloud cover.** Canadians are a little less sure about the role of cloud cover in local air quality conditions. Just three in ten (29%) would agree cloud cover has a lot of influence, while another four in ten (42%) say it likely exerts some influence. As with the other weather conditions tested, belief in the influence of cloud cover is associated with the degree of personal sensitivity to air quality issues.

## Impact of weather conditions on local air quality 2004



### Q.10

*Please tell me whether each of the following types of weather conditions has a lot of influence, some influence, or little influence in determining whether the air quality is good or bad? Starting with ...*

## Impact of the urban landscape on air quality

*Canadians tend to think air pollution is highly localized, and so that air quality is better in the suburbs and city parks than in denser downtown areas. Many also believe that smaller cities invariably have better air quality than larger ones.*

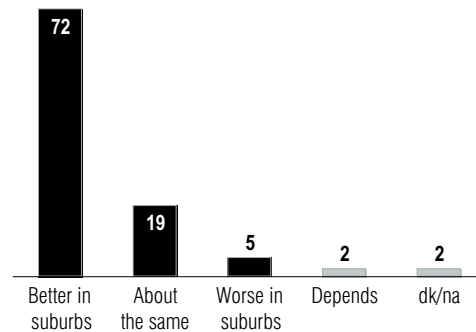
Another aspect of air quality examined in the research is the extent to which it is seen as localized, and varies across different parts of a typical Canadian urban community. The findings indicate clearly that most Canadians believe that air pollutants are highly localized to their primary sources.

**Downtown versus suburban air quality.** Given that Canadians identify vehicle emissions as a primary source of local air pollution, it is perhaps not surprising that they consider more densely developed urban downtowns to have worse air quality than outlying suburban areas. This is the view of more than seven in ten (72%), compared with one in five (19%) who believe air quality would likely be about the same in both types of areas, and only five percent who say it would be worse in the suburbs.

This tendency to assume air quality is better in suburban areas is evident across the country, but is especially so in Quebec (82%), while least so in British Columbia (58%) – where there is the greatest concentration of residents indicating that air quality is either worse in suburban areas or depends (e.g. on the community).

**Air quality in city parks.** City parks are often considered to be oases from urban grime, and trees do have a positive impact on micro-climates in terms of cooling air temperature and recycling carbon dioxide. Canadians are somewhat divided, however, on whether the air quality in a typical Canadian city is actually better in a city park than in a more densely populated area. Just under half (46%) of those surveyed hold this view, with almost as many (42%) maintaining that air quality in such parks would likely be about the same as in denser core sections of the same city. A small percentage (7%) express the opinion that the air quality would actually be worse in such parks.

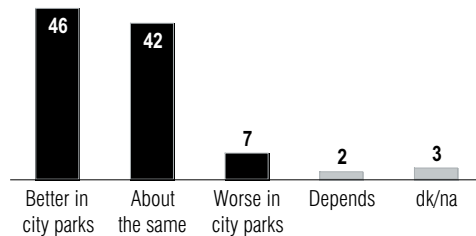
### Air quality in suburbs versus downtown 2004



#### Q.11

*Thinking about a typical Canadian city, would you say the air quality in a suburban area is likely to be better, about the same, or worse than the air quality downtown?*

### Air quality in city parks versus densely settled areas 2004



#### Q.12

*In a typical Canadian city, would you say the air quality in a city park is likely to be better, about the same, or worse than in a densely populated area of that city?*

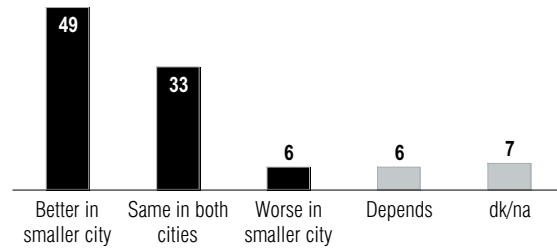
Views on this particular issue are largely similar across the country, with Prairie centre residents among the most likely to believe that urban air quality is better in city parks.

**Air quality in different-sized cities.** The survey also examined the question of whether Canadians believe that air pollution is inherently worse in larger cities than in smaller ones. Respondents were asked if a forecast of “poor air quality” is given in Canadian cities of two different sizes (e.g. Montreal and Saskatoon) meant the actual pollution level was the same in both cities, and if not in which it would likely be worse.

Canadians are more likely than not to believe that a poor air quality reading in a larger city means a lower level of air quality than a comparable reading in a smaller city. Only three in ten (33%) Canadians agree that a “poor air quality” forecast would mean the same level of pollution in both cities. Of those who disagree, the vast majority say the air quality would be better in the smaller city (48%) rather than worse in the smaller city (6%). The remainder maintain either it depends (e.g. on the particular cities or type of pollutants) or cannot offer a meaningful response to the question.

Opinions on this question do not vary much across the country. Perceptions of air quality being better in smaller cities is marginally more evident among Canadians with lower levels of education, men and those aged 60 and older.

### Poor air quality reading in larger versus smaller Canadian cities 2004



#### Q.13

*When a forecast of “poor air quality” is given in Canadian cities of two different sizes, such as a large one like Montreal, and a smaller one like Saskatoon, do you think that it means that the actual level of pollution in the two cities is the same?*

#### Q.14

*Would you say that in this situation, the actual level of pollution in the smaller city is likely to be better, the same or worse than it is in the larger city?*

*Subsample: Those who think the actual level of pollution is not the same when a forecast of “poor air quality” is given in Canadian cities of two different sizes (n=918)*

## AIR POLLUTION AND HEALTH

### General effect of air pollution on health

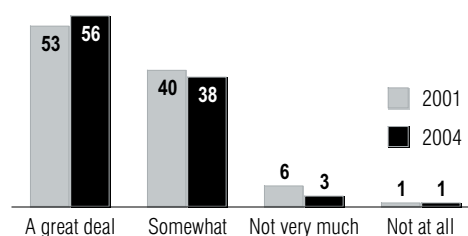
*A majority of Canadians believe that air pollution has a significant impact on people's health, primarily in the form of respiratory illness and breathing-related problems.*

Consistent with previous research, the current survey reveals that most Canadians believe that air pollution has a real impact on human health. More than half (56%) say that air pollution affects the health of Canadians "a great deal," a percentage that has increased marginally since 2001 (up 3 points). Most of the remainder believe air pollution "somewhat" affects health, while very few (4%) maintain there is little or no impact at all.

The link between air pollution and health is acknowledged by a strong majority in every identifiable group, but some variation is evident in the perceived extent of this impact. Those who believe air pollution affects health a great deal are most likely to live in central and eastern Canada, while this view is least apt to be shared in Alberta (40%). Since 2001, this view has strengthened in almost every province from the Prairies east, while remaining essentially unchanged in Alberta and declining marginally in B.C. (to 51%, down 4 points).

As in 2001, women are more likely than men to believe that air pollution has a significant effect on health, and this gap has widened over the past three years (now 66% among women, compared to 46% among men). Francophones (64%) continue to be more likely to express this opinion, relative to anglophones and allophones (54% each). Finally, belief in substantial health impacts of air pollution increases along with Canadians' sensitivity to local air pollution issues (e.g. assessment of local air quality, degree of hazard posed by local conditions).

Perceived effect of air pollution on Canadians' health 2001-2004



Q.15

*In your view, to what extent does air pollution affect the health of Canadians? Does it affect them ...?*

Canadians who believe air pollution is responsible for at least some health effects (98% of the population) were also asked to identify what specific health effects they think are most likely to occur (asked unprompted to test unaided perceptions). As in 2001, the public provides a range of responses to this question, but by far the predominant effects pertain to respiratory and breathing-related problems, either in general terms or specifically in terms of asthma and bronchitis – such responses were given by close to nine in ten (88%) Canadians.

Beyond respiratory problems, smaller percentages of Canadians identify a number of other types of health effects, principally cancer (20%), allergies (14%) and heart disease (10%). Notably, only four percent are unable to suggest any type of health effect that might occur as a result of exposure to air pollution, as was the case in 2001.

The identification of health effects from air pollution follow a similar pattern across the country, with only minor variation. Quebecers are less likely to mention asthma but more apt to specify bronchitis. Women tend to emphasize asthma and allergies, while men are likely to mention general breathing and respiratory problems. And it is rural residents who are most apt to say that cancer is a possible outcome of exposure to air pollution.

### Specific health effects of air pollution 2001-2004

	2001	2004
Net respiratory illness/problems	na	88
Asthma	37	42
Breathing problems	–	29
Bronchitis	6	6
Other respiratory/lung problems	56	50
Cancer	24	20
Allergies	11	14
Heart disease	5	10
Skin rashes/irritation	3	5
General health problems	8	5
Eye problems	–	4
Headaches	–	2
Colds/viruses/infections	–	2
Death/shorter life span	2	2
Other	12	12
dk/na	4	4

*Q.16*

*What specific effects on human health do you think are most likely to occur as a result of air pollution? Anything else?*

*Subsample: Those who think that air pollution affects the health of Canadians a great deal, somewhat or not very much (n=1,470)*



## Specific health effects of air pollution

*Most Canadians readily link air pollution to respiratory ailments such as asthma and bronchitis. By comparison, relatively few associate it with illnesses such as cancer or heart disease.*

In addition to what types of health effects the public can identify unaided, the survey also examined the extent to which Canadians believe that air pollution can contribute to each of several specific illnesses when specifically prompted. This provides a valuable measure of the strength of opinions about such connections, rather than testing awareness and knowledge.

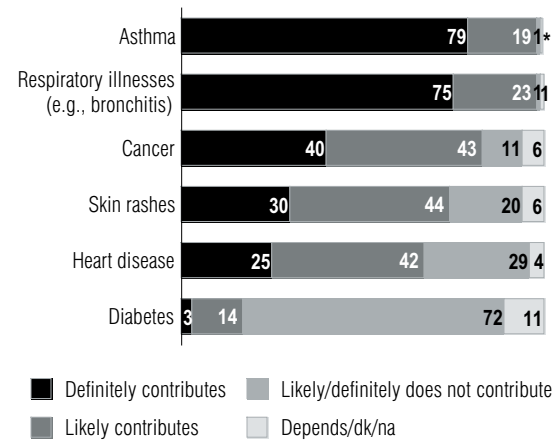
Consistent with the unaided responses (reported previously), Canadians are most certain about the effect of air pollution on respiratory illnesses, which are identified by close to nine in ten (88%). At least three-quarters of those surveyed say they believe that air pollution “definitely contributes” to asthma (79%) and respiratory illnesses, such as bronchitis (75%), with most of the remainder indicating that it “likely contributes.”

Other types of health problems elicit much less consensus. Four in ten (40%) Canadians believe that air pollution definitely contributes to cancer, while smaller percentages make a similar connection with skin rashes (30%) and heart disease (25%). In each case, pluralities of just over four in ten express the view that air pollution is a “likely” contributor.

Diabetes, however, is one illness that few Canadians associate with air pollution (it was not mentioned by anyone in the preceding unaided question). Fewer than one in five agree that air pollution either definitely (3%) or likely (14%) contributes to diabetes.

Perceptions about the certainty of a link between air pollution and these health problems are generally similar across the population. The connection with asthma and respiratory problems is widely identified in all groups, but most strongly among those diagnosed with such conditions. Other problems are somewhat more likely to be identified with air pollution by residents of Quebec and less so by those living in Alberta and British Columbia. In the case of all illnesses presented, the link with air pollution increases along with Canadians’ sensitivity to local air quality and reported health effects from local air quality conditions.

## Impact of air pollution Specific health problems 2004



\* Less than one percent

### Q.19

*What about the impact that air pollution can have on different types of health problems? Do you think air pollution does, or does not contribute to each of the following ...?*

*Subsample: Those who think that air pollution affects the health of Canadians a great deal, somewhat or not very much (n=1,470)*

## Long-term versus immediate health effects

*Canadians tend to think air pollution causes long-term illness rather than immediate health problems, but most acknowledge that acute impacts are also likely.*

In understanding the public's perceptions of the health implications of air pollution, it is important to know whether these effects are seen as immediate or longer term. This has important implications for communications strategies because the more health risks are seen as immediate, the more people will pay close attention and take action to reduce their personal risks.

Results from the current survey show that Canadians tend to think of the health effects of air pollution as longer term problems that may not be evident for some time (perhaps because this is the common understanding of most types of respiratory illness), but at the same time acknowledge there may be immediate health impacts as well.

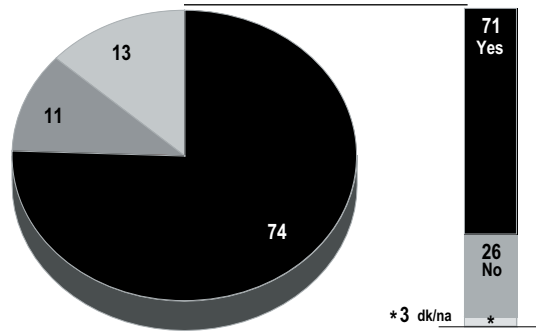
When asked directly, three-quarters (74%) of Canadians say they think of the health effects of air pollution tend to involve longer term problems that won't be evident for some time. The remainder are split between those who say the health effects of air pollution are primarily immediate ones that people will notice right away (13%) and those who believe that both types of health effects are equally likely to result from air pollution (11%).

The tendency to see health effects as longer term is evident across the country, but a focus on immediate effects is somewhat more evident in Ontario (18%), among women and older residents, while identification of both types equally is highest in Quebec, among more educated Canadians and those most negative about their local air quality.

While these data indicate that most people seem to think of air pollution effects on health as being long term rather acute, they do not reject the possibility of immediate effects when specifically prompted. Among those who initially say the effects are more likely to be longer term, seven in ten (71%) do agree that there may also be some immediate health effects that people in Canada might experience as a result of air pollution.

## Health effects of air pollution 2004

More immediate or long-term?



- More long-term problems that won't be evident for some time
- Both types of effects equally likely
- More immediate effects that people notice right away

### Q.17

*Do you think the health effects of air pollution tend to be more immediate ones that people notice right away, or more longer term problems that won't be evident for some time?*

*Subsample: Those who think that air pollution affects the health of Canadians a great deal, somewhat or not very much (n=1,470)*

### Q.18

*Do you think there are any immediate health effects that people in Canada might experience as a result of air pollution?*

*Subsample: Those who think that air pollution affects the health of Canadians a great deal, somewhat or not very much in the long term, or who are unsure about the duration (n=1,107)*

This response is once again strongest among women and Canadians with more education, as well as among anglophones and those sensitized to local air pollution issues.

## People most at risk from air pollution

*Canadians are most likely to think of the elderly as being most at risk from air pollution, but a significant proportion also believe that children and people with pre-existing health problems would also be more likely to experience health effects from poor air quality.*

Canadians believe that the public's health is affected by air pollution, but do they consider certain groups to be at greater risk than others? This question was posed in the survey (unprompted), and almost everyone could identify at least one or two groups they think are more likely to be particularly affected by poor air quality. At the top of the list are the elderly/seniors (71%), followed by children or infants (58%), and people with pre-existing health problems (mostly related to respiratory illness) (49%).

Beyond these three principal groups, few identify others who face comparatively higher risks from air pollution, such as people who work or exercise outdoors, smokers and people living in urban areas. One in ten (9%) insist that everyone is equally at risk from air pollution, with this response most likely to be given by Canadians who are sensitized to local air quality issues (e.g., 24% among those who say their local air quality is a very serious health hazard).

The same three at-risk groups are identified prominently across the population. The elderly and children are most apt to be emphasized by Ontario residents and Canadians with the most education, but less so by those aged 60 years and older. Women are more likely than men to mention children, people with pre-existing health problems and everyone.

## Types of people most at risk from air pollution 2004

Elderly/seniors	71
Children/infants	58
People with health problems	49
Pre-existing problems	22
Respiratory problems	16
Asthma	14
Weak immune systems	10
Heart conditions	3
Allergies	2
Other problems	1
People exposed to pollutants	4
People working/exercising outdoors	3
Smokers	2
People living in urban areas	2
Other	7
Everyone	9
dk/na	4

### Q.20

*What types of people do you believe are most likely to experience health effects from air pollution?*

*Subsample: Those who think that air pollution affects the health of Canadians a great deal, somewhat or not very much (n=1,470)*

## Threshold levels for health effects

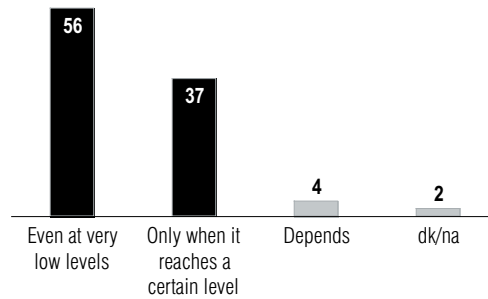
*The public is more likely than not to believe that people's health can be affected by air pollution even when it is at very low levels.*

Another important question to answer is whether the public thinks that air pollution affects health only when it reaches a certain threshold level. This idea is implicitly conveyed through the current air quality advisory system now in place (in which public announcements are made when air quality readings reach a pre-established reading), but current scientific evidence indicates that health effects can be detected at any level.

In terms of public perceptions on this question, there is no consensus but the balance of opinion is towards the view that air pollution at any level can affect health. More than half (56%) agree that people's health begins to be affected when there are only very low levels of pollutants, compared with 37 percent who say there is an impact on health only when pollution reaches a certain level.

The view that air pollution affects health even at very low levels is somewhat more widely held among anglophones (62%) and Canadians with at least some post-secondary education (60%), while least apt to be shared by residents of Quebec (46%), Canadians aged 60 and over (45%), and allophones (44%) (it is Quebecers who are most likely to insist the question of thresholds depends on other factors, such as the type of person or pollutant, 11%).

## Point at which air pollution affects health 2004



### Q.21

*Do you think that air pollution affects people's health at any level; that is, even when there are only very low levels of pollutants in the air? Or do you think the impact on health is only when air pollution reaches a certain level?*

*Subsample: Those who think that air pollution affects the health of Canadians a great deal, somewhat or not very much (n=1,470)*

## Health effects of indoor versus outdoor air pollution

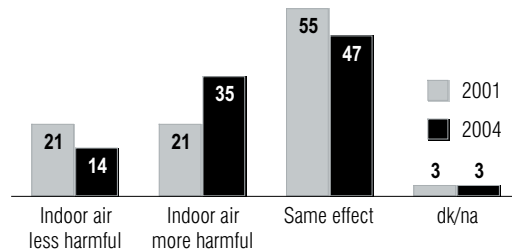
*Canadians are inclined to believe that indoor air pollution is as bad or worse than outdoor air pollution, and this perception has strengthened since 2001.*

The focus of air pollution in Canada is primarily on what is happening out of doors, but there is clear evidence that air quality in buildings can also be a problem (particularly in institutional and work environments that rely on closed ventilation systems). How do Canadians compare the relative health risks of indoor versus outdoor air quality?

Most Canadians, in fact, consider indoor air quality to be at least as much of a hazard, if not more so; and this perception appears to have strengthened over the past three years. The public is more than twice as likely to say that indoor air quality is more harmful (35%) than less harmful (14%) to human health, which represents a significant shift since 2001 when equal percentages expressed these opposing perspectives. Close to half (47%) believe that indoor and outdoor air quality have a similar effect on people's health.

This shift in opinion towards a more negative view of the health effects of indoor air pollution is evident across the country, but by far is most significant in Quebec where 56 percent now say that indoor air is more harmful (up 40 points). This trend is also more noticeable among men (to 41%, up 17) than among women (to 30%, up 12) and Canadians with less education.

## Health effects of indoor versus outdoor air pollution 2001-2004



### Q.22

*Regarding its effect on health, do you think indoor air pollution is less harmful, more harmful, or has the same effect as outdoor air pollution?*

*Subsample: Those who think that air pollution affects the health of Canadians a great deal, somewhat or not very much (n=1,470)*

## Steps to reducing personal exposure to air pollution

*Canadians are most likely to believe the best way to reduce exposure to air pollution is to avoid localized sources of pollution, and less apt to put their faith in staying indoors or reducing strenuous activity.*

While most Canadians have a clear understanding that air pollution can be harmful to health, what do they know about what can be done to reduce personal exposure to this hazard? This question was first addressed in an unprompted way to measure the public's awareness of actions that can be taken.

Three-quarters of Canadians can, in fact, identify one or two actions that people can take to limit exposure to air pollution and its harmful health effects, but none are mentioned by more than a relatively small percentage of the population. Steps most likely to be identified include staying indoors (20%), getting away from the city or high pollution areas (14%), and wearing a mask (12%), followed by a lengthy list of other less widely mentioned steps involving various ways to limit exposure (limit activities during certain times of the day), healthy lifestyles (reduce smoking) and citizen action (lobby government).

One in ten (12%) Canadians insist that there is *no* effective way to limit personal exposure to air pollution, while another 15 percent could not provide a meaningful response to the question. These combined categories comprise at least one-fifth of the population from each population segment, but are most evident among those whose household has not been affected by air pollution (30%) and are not familiar with the local AQI (35%), and least evident among those who have taken actions to reduce health impacts (13%)

Public awareness of steps for reducing personal exposure to the harmful effects of air pollution are generally similar across the population. Some actions are more apt to be mentioned by a specific gender, age group or other identifiable group, but there is no broad pattern of responses to this question that lead to any substantive conclusions. Quebec residents do stand out as being more likely than other Canadians to say it is not possible to reduce personal exposure to the harmful effects of air pollution.

## How to limit personal exposure to air pollution health effects 2004

Stay indoors	20
Get out of city/polluted areas	14
Wear a mask	12
Change driving habits	8
Use air purifier/filtration	7
Move to country/rural area	7
Avoid high traffic areas	6
Avoid second-hand smoke	5
Reduce smoking	4
Exercise/live healthy	4
Lobby government	4
Avoid exposure at certain time of day	4
Use public transit	3
Limit activities during advisories	3
Avoid strenuous activity	3
Stay informed/increase awareness	2
Other	20
No way to limit exposure	12
dk/na	15

### Q.30

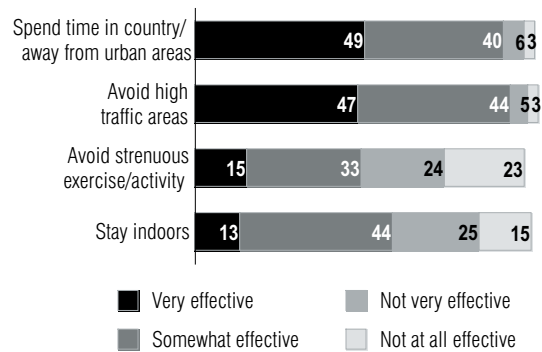
*Research has shown that air pollution can cause health problems among both healthy people and those with heart or lung illnesses. What, if anything, do you believe people can do to limit their exposure to air pollution and its harmful health effects? Anything else?*

This issue was further explored by asking respondents to indicate how effective they believe each of four specified types of actions would likely be in reducing exposure to air pollution and its health effects (ie., measuring opinions rather than awareness).

The results reveal the extent to which citizens believe that air pollution is localized around its sources. Close to half of Canadians believe a very effective means of limiting personal exposure to air pollution would be spending time in the country, away from urban areas (49%) or by avoiding high traffic areas (47%). By comparison, few place this degree of effectiveness on avoiding strenuous activity or exercise (15%), or staying indoors (13%).

Perceived effectiveness of spending time in the country and away from high traffic areas is consistently widespread across the population. Avoiding strenuous activity and staying indoors is most likely to be considered as very effective by residents of Ontario and Canadians who consider themselves to be familiar with their local AQI, while this view is least apt to be shared by Quebecers.

### Effectiveness of actions to limit personal exposure to air pollution 2004



Q.32

*How effective do you believe each of the following measures is likely to be in limiting exposure to air pollution and its health effects ... Staying indoors ... Avoiding any strenuous exercise or activity ... Avoiding high traffic areas ... Spending time in the country, away from urban areas?*



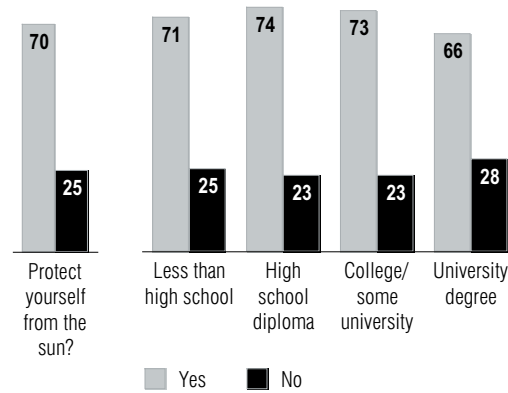
## Confusion around the ozone layer and ground level ozone

*Seven in ten Canadians believe that protecting oneself from the sun is the best way to reduce exposure to unhealthy levels of ozone.*

One of the challenges in promoting effective strategies for reducing exposure to air pollution is addressing a point of public confusion between the ozone layer in the upper atmosphere and ground level ozone that represents one of the primary sources of air pollution in much of Canada. This confusion is revealed through the finding that 70 percent of Canadians agree that protecting themselves against the sun (e.g. from harmful UV rays) is the best thing they can do when a local air quality advisory reports an unhealthy level of ozone in the air.

This opinion is the majority view across every identifiable group of the population, but is more widespread in Winnipeg/Regina/Saskatoon (81%) and the Atlantic provinces (80%), among women, Canadians 45 and older, and those who consider themselves to be familiar with their local AQI. Belief that sun protection is the most effective way to reduce exposure to reported high levels of ozone is least evident in Quebec (54%).

### Best way to protect yourself when an advisory reports a high level of ozone By education



#### Q.33

*If a local air quality advisory reported an unhealthy level of ozone in the air, do you think protecting yourself from the sun is the best thing you can do?*



## PERSONAL HEALTH EFFECTS

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### Health hazards to the local population

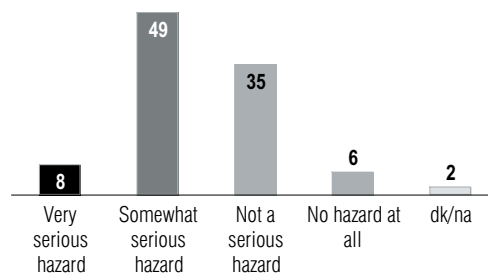
*Most Canadians believe that air pollution in their own community poses only a limited hazard to health, a view that is almost as widespread in the major urban centres as in smaller cities and towns across the country.*

While Canadians say that air pollution clearly affects the health of Canadians generally, they are noticeably less likely to acknowledge this to be the case in their own community. This discrepancy suggests a type of “disconnect” is at play for some people, who prefer to believe that this problem is happening somewhere else.

Fewer than one in ten (8%) of Canadians believe that air pollution presents “a very serious hazard” to the health of people living in their area, and this perception is only marginally broader in the major urban centres (10%) and Toronto in particular (13%). The most common view is that air pollution is a “somewhat serious” (49%) or “not serious” (35%) to health in their community, while six percent insist there is no health threat at all.

Canadians most likely to believe that local air pollution is a very serious health hazard include those who rate local air quality conditions as fair to poor (18%), those with fair to poor health status (19%), and those whose household health has been affected by pollution (17%). Low to nil hazard is the view held by more than half of residents living in the Prairie centres, the Atlantic provinces and those living in rural communities.

Is air pollution a hazard to people in your area?  
2004



Is air quality a hazard to people in your area?  
By community 2004

	VERY SERIOUS HAZARD	SOMEWHAT SERIOUS HAZARD	NOT A SERIOUS HAZARD	NO HEALTH HAZARD AT ALL
<b>Canada</b>	<b>8</b>	<b>49</b>	<b>35</b>	<b>6</b>
Toronto	13	55	26	3
Montreal	9	53	30	4
Vancouver	7	48	36	6
100,000 to 1 million	8	49	37	6
5,000 to 100,000	9	47	35	7
Less than 5,000	4	40	43	11

Q.23

*How much of a hazard do you believe air pollution presents to the health of people living in your area? Does it present ...?*

*Subsample: Those who think that air pollution affects the health of Canadians a great deal, somewhat or not very much (n=1,470)*

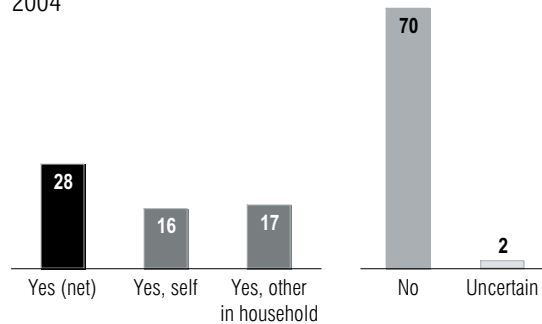
## Household health effects from pollution

*Almost three in ten households report experiencing some type of health effects from air pollution at some point over the past two years, primarily in the form of asthma and other respiratory problems.*

Although most Canadians rate their local air quality to be good to excellent, and few believe it poses a serious hazard to health, a surprisingly high percentage report experiencing some type of impact from air pollution in their area. A total of close to three in ten say that they themselves (16%) or someone else in their household (17%) have experienced some type of health or physical problem in the past two years that might be attributed to air pollution.

Reports of household health impacts from pollution are most likely to come from residents of Ontario (32%; 36% in Toronto), women, and residents with children 16 and under living in the household, while less widely indicated by rural residents, those aged 60 and older, and those without a high school diploma. As might be expected, health status is an important predictor of such reports: given by 48 percent of those in only fair to poor health status and 49 percent of those who have a diagnosed respiratory illness. Not surprisingly, household health effects are much more likely to be reported by Canadians who rate local air pollution as a very serious hazard (55%), compared with those who consider it to be somewhat (35%) or not (14%) serious.

## Personally experienced health effects from air pollution in past two years 2004



### Q.24

*Have you or someone else in your household experienced any type of physical or health problems over the past two years that might be attributed to air pollution at the time?*

When asked more specifically what type(s) of health problems they or others in their household experienced, Canadians making such reports were most likely to mention asthma (46%), other respiratory or lung problems (29%), allergies (16%) or bronchitis (10%). Smaller percentages identified significant illnesses such as heart disease, cancer and diabetes.

How could people tell that their health symptoms might be linked to air pollution? When asked (unprompted), Canadians reporting such effects are most likely to say they could tell from their symptoms (39%) or because of a doctor's diagnosis (27%). Others drew this connection from the presence of poor air quality conditions in their area, including from an air quality advisory or simply being in certain parts of their community.

### Household health problems attributed to air pollution

Among those reporting problems 2004

Asthma	46
Other respiratory problems	29
Allergies	16
Bronchitis	10
Skin irritation/rashes	6
Heart disease	5
Difficulty breathing	4
Cancer	4
Migraines/headaches	3
Fatigue/loss of concentration	3
Cough/sore throat	2
Sore/injured eyes	2
Sinus infection/problems	2
Diabetes	1
Other	9

#### Q.25

*What type of health problem(s) did {you/this other household member} experience?*

*Subsample: Those who said that they, or someone in their household, have/has experienced physical or health problems over the past two years due to air pollution (n=413)*

### Basis for linking household health effects to air pollution

Among those reporting problems 2004



#### Q.26

*And how did {you/this other person} determine that {this/these} health problem(s) {was/were} due to air pollution?*

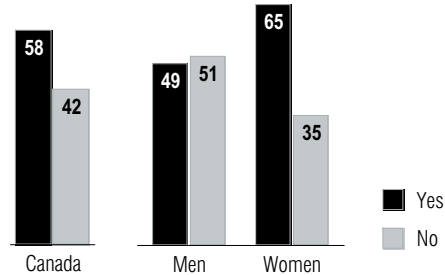
*Subsample: Those who said that they, or someone in their household, have/has experienced physical or health problems over the past two years due to air pollution and identified a problem at Q.25 (n=412)*

## Actions taken to reduce personal exposure

*Close to six in ten of those who report health effects from air pollution say they took steps to reduce their exposure, mostly in terms of reducing time spent outdoors and using some type of home air purifier.*

Given that a noticeable proportion of Canadians believe that they or others in their household have experienced health effects from air pollution, what – if anything – have they done in response? Of the group reporting such impacts, close to six in ten (58%) say they or others in their household (who have been affected) have taken specific actions to reduce their exposure to air pollution because of the impact it has had on their health. Such actions are most likely to be reported by Toronto area residents (68%), women (65%) and Canadians with a university education (64%), while least apt to be taken by those under 30 years of age.

Taken action to reduce exposure to air pollution effects on health?  
Among those reporting problems By gender 2004



### Q.27

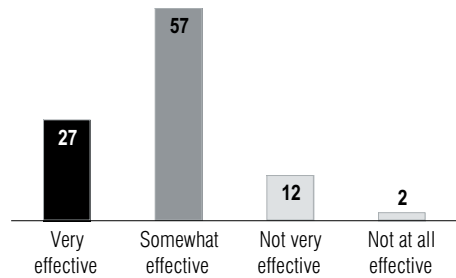
*Have you or others in your household taken specific actions to reduce your exposure to air pollution because of the impact it has had on your health?*

*Subsample: Those who said that they, or someone in their household, have/has experienced physical or health problems over the past two years due to air pollution and identified a problem at Q.25 (n=412)*

Those reporting taking action are most likely to say they reduced the time they spent out of doors (32%), used some type of home air purifier or filter (25%), or removed themselves from the city or polluted area (17%). A range of other types of response were each mentioned by smaller proportions of this group, including avoiding second-hand smoke (10%), purchasing a more environmentally-friendly home (5%) or wearing a mask (3%). Only four percent of this group reported to reduce their exposure by cutting down on strenuous activities.

Finally, how effective did people find these steps taken to reduce the impact that air pollution was having on their health? Those reporting such actions are reasonably positive about the efficacy of their actions. More than eight in ten saying they believe the steps they took were very (27%) or somewhat (57%) effective in helping them reduce the effect of air pollution on their health, compared with one in six who felt they were not very or not at all effective in this way.<sup>5</sup>

Effectiveness of actions taken to reduce exposure to air pollution effects on health 2004



Q.29

And how effective would you say these steps have been in helping you reduce the effect of air pollution on your health? Have they been ...?

Subsample: Those who said that they, or someone in their household, have/has experienced physical or health problems over the past two years due to air pollution – and took actions to reduce exposure to air pollution and who identified an action at Q.28 (n=238)

Actions taken to reduce air pollution effects on health

Among those reporting problems 2004

Reduce time spent outdoors	32
Air filter/humidifier	25
Get out of the city/away from polluted area	17
Avoid second-hand smoke	10
Taken medication/oxygen	7
Installed/used air conditioner	7
Quit smoking/smoke outdoors	7
Keep doors/windows closed	6
Avoid toxins/chemicals	5
Bought new home/made environmentally-friendly renovations	5
Fresh air/exercise	4
Cut down on strenuous activity/aerobic exercise	4
Keep house clean	4
Wear a mask	3
Lobbying/activism	3
Don't burn wood/fossil fuels	2
Sought out more information on advisory/air quality	2
Quit my job/stopped working	2
Changed diet	2
Other	6
dk/na	1

Q.28

What steps have you taken to reduce your exposure to air pollution? Anything else?

Subsample: Those who said that they, or someone in their household, have/has experienced physical or health problems over the past two years due to air pollution – and took actions to reduce exposure to air pollution (n=241)

<sup>5</sup> The subsample who qualified to answer this question is too small to permit analysis of results by regional or demographic subgroups.



## AIR QUALITY ADVISORIES AND THE AQI

The final section of the survey addressed Canadians' awareness and use of the current air quality index (AQI) currently broadcast in their area. While many seem to rely on their own senses to detect poor air quality conditions, AQI and episode advisories represent the principal means for alerting communities about the need to take actions to reduce exposure to adverse health effects.

### Recall of air quality announcements

*About half of Canadians recall seeing or hearing air quality announcements in their area over the past year, most commonly in larger urban centres.*

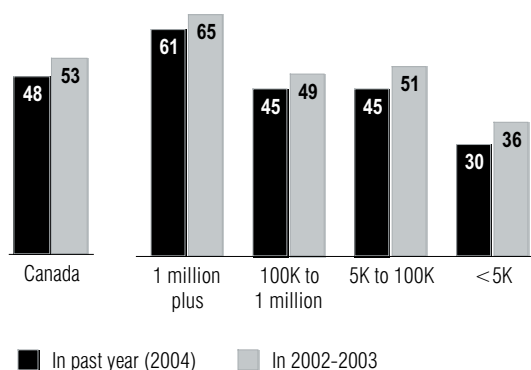
The survey probed the public's awareness of air quality advisories that have been issued in their area over the past two years. This survey was conducted in the fall, shortly after what is typically the most concentrated period of poor air quality and resultant advisories. However, the summer months of 2004 brought better than usual levels of air quality and a reduced number of advisories.

About half of the Canadian population served by air quality advisories can recall seeing or hearing such information in their area. Six in ten (59%) could recall such an advisory at some point over the past three years. Just under half (48%) could recall one over this past year (2004), while a comparable percentage (53%) say they remember hearing or seeing this type of information at some point over the two previous years (2002-2003).

As might be expected, recall of advisories is highest in those areas where they are most commonly issued, notably the country's major urban centres (62%), but especially in the Greater Toronto Area (74%), while noticeably less so in Montreal, 46%). By comparison, such information is remembered by only three in ten

### Recall of air quality advisories

By community size 2004



Q.34

*Do you recall seeing or hearing any announcements or information about air quality in your area ...?*

*Note: Question wording modified ask about this year and also previous years*

residents of Quebec (31%) and rural communities across Canada (30%).

Across the country, recall of air quality advisories (both this year and for the two previous years), is somewhat higher among Canadians aged 30 to 59, among those with higher education and those sensitized to local air quality issues. Having experience with health effects linked to air pollution appears to have only a modest impact on recall of advisories over the past year (61%, versus 43% among those without such effects).

## AQI familiarity and use

*A majority of Canadians are at least somewhat familiar with their local AQI, but most do not make use of it on a regular basis. Consistent with other forms of news and weather, most look for air quality information on TV.*

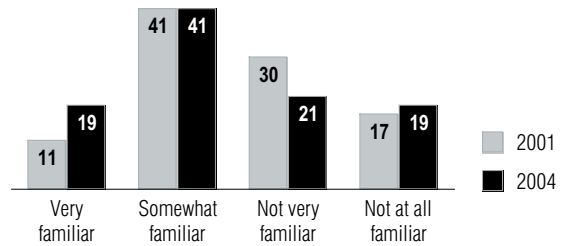
Six in ten Canadians say they are very (19%) or somewhat (41%) familiar with the air quality index (AQI) currently distributed through the media in their area, with another one in five (19%) indicating they are not at all familiar. This represents a noticeable increase since 2001, when only 11 percent reported to be “very familiar” with this type of published information. This increase has occurred across almost all segments of the population, but most noticeably in the Prairie centres and Ontario (up 13 points in each case), while remaining essentially unchanged in Quebec (up 1).

For the current data, familiarity is highest in Ontario (particularly in Toronto where 34% say they are very familiar), and among Canadians with at least some post-secondary education. Those least apt to say they are at least somewhat familiar with their local AQI live in Quebec (43%) and are under 30 years of age.

While community size is a key factor in the public’s likelihood of recalling air quality advisories, it does not appear to influence Canadians’ reported familiarity with their local AQI. Sensitivity to local air quality issues does make a difference (e.g. those who believe air pollution is a very serious local hazard are more likely than others to know about this measure), but having health effects linked to air pollution does not.

Among those who have any knowledge of their local AQI, how often – if at all – do they make use of it? Those Canadians familiar with this type of information are more likely than not to use it at some point, but relatively few appear to do so on a consistent basis. Overall, only one in five (20%) say they make frequent use of the AQI, while another 37 percent report to do so occasionally. This represents a marginal increase since 2001, when 17 percent said they frequently used the AQI.

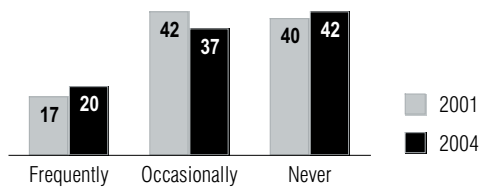
Familiarity with local air quality index 2001-2004



Q.35

*Would you say you are very, somewhat, not very, or not at all familiar with something called the air quality index for your area currently distributed through the media?*

Frequency of using the AQI Among those familiar 2001-2004



Q.36

*How often do you personally use the {air quality index}? Is it ...? Subsample: Those who are familiar with the AQI (n=1,208)*



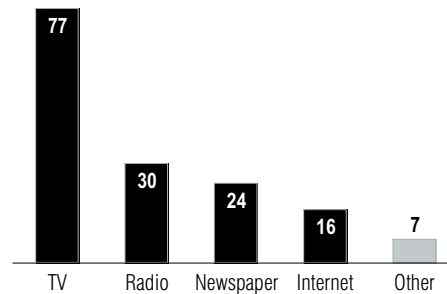
This increase in frequent use of the local AQI since 2001 has occurred primarily in Ontario and Quebec (up 4 and 5 points, respectively), as well as among women (up 6), and Canadians aged 60 and older (up 9). As with familiarity, frequent use of the AQI is most widespread in Ontario (especially Toronto at 32%), among women and older Canadians.

As was the case in 2001, familiarity is a key factor in use of the AQI. Frequent use is reported by half (49%) of those very familiar with the AQI, compared with only 16 percent of those only somewhat familiar. Respiratory illness also continues to influence use of this information, with frequent use reported by 30 percent of those diagnosed with such illness (up 8 points since 2001), compared with only 17 percent of others. Similarly, frequent use is more than twice as likely to be reported by Canadians who say their health has been affected by air pollution in the past two years (32%) as among those unaffected (15%).

Consistent with other types of news and weather, Canadians who make any use of the AQI are most likely to say they look for air quality information on TV (77%), with half of this group specifically mentioning The Weather Channel. By comparison, no more than three in ten say they look for air quality information on the radio (30%), newspapers (24%) or through the Internet (16%). Three percent specifically mention the Environment Canada website, while one percent indicate they get air quality information from WeatherRadio or WeatherCopy – these responses are most commonly given by residents of the Prairie centres.

Television is the principal source of air quality information across the country, but is most widely used in the Prairie centres. Radio is most popular in British Columbia (especially Vancouver, 44%), Canadians aged 30 and older, and those with a university degree. Newspapers are most apt to be mentioned in B.C., and among Canadians aged 45 and older and allophones, while the Internet is most likely to be relied upon by those under the age of 45 and who have a university degree. Quebecers are less likely than other Canadians to rely on any of these sources for air quality information, suggesting they simply put less priority on doing so.

### Source for air quality information 2004



#### Q.37

*And where are you most likely to look for air quality information? Anything else?*

*Subsample: Those who are familiar with the AQI and use it (n=686)*

## Familiarity with AQI formats

*Canadians are most familiar and comfortable with the word scale format of the AQI, followed by the colour and numeric scales.*

Canadian air quality indexes are presented in three different formats, in words, colours and numbers, although the specific scale points vary across jurisdictions. Canadians are by far most familiar with the word scale (e.g. excellent to poor) (77%), followed by the colour scale (46%) and the numeric scale (35%).

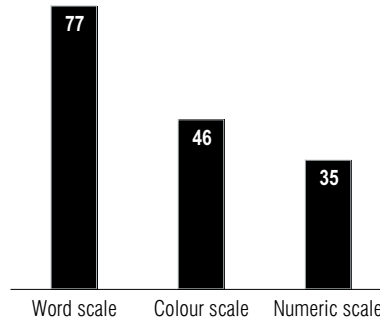
The word scale is the most well-known across the country, but has the highest recognition in Ontario (86%), as well as among Canadians aged 30 to 59 and those with more education. It is noticeably less apt to be familiar to residents of Quebec (57%). Quebecers, along with British Columbians, are the most likely to be aware of the colour scale, as are Canadians under 45 years of age. The numeric scale (based on a 0 to 100+ range) is most apt to be recognized by Toronto area residents (51%) and Canadians with more education; by comparison, this scale is familiar to fewer than one in four residents (each) of Alberta (21%) and Atlantic Canada (23%).

Those familiar with more than one of these formats were asked which one of them they personally find to be most useful. Along with general familiarity (and perhaps because of this), Canadians are most likely to find the word scale (45%) to be most useful to them personally, followed by the colour (27%) and numeric (22%) scales (another five percent volunteer they find all three scales to be equally useful).

The word scale is the preferred choice across most of the population, but most noticeably in Alberta (61%), people with diagnosed respiratory problems and whose health has been affected by pollution. The colour scale is most apt to be seen as most useful in Quebec and Atlantic Canada, to residents of smaller-sized communities, and among those who are least familiar with their local AQI. The numeric scale is most apt to be favoured by Vancouver residents (32%) and Canadians most familiar with their local AQI.

## Familiar with AQI format

Those familiar with AQI 2004



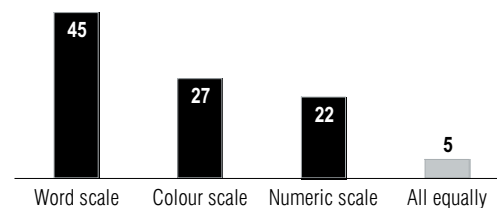
Q.38

*The air quality index is usually presented in three different formats. Which of these are you familiar with ...?*

*Subsample: Those who are familiar with the AQI (n=1,208)*

## Most useful AQI format

Those familiar with more than one format 2004



Q.39

*And which of these formats do you personally find to be the most useful?*

*Subsample: Those who are familiar with more than one AQI format (n=669)*

## Perceived AQI threshold for health impacts

*People are most likely to say air quality would have to decline to the worst level on the AQI scale before they would consider changing their behaviour. This pattern occurs with all three formats, but the colour scale is more likely to prompt action at less harmful levels.*

From a communications perspective, an important question is how citizens interpret the significance of the different levels of air quality reported in an air quality index. That is, at what level would they be prompted to pay attention or change their behaviour? This issue was addressed on the survey by presenting respondents with the AQI format they are most familiar with, and asking them to indicate the level at which they: a) believe air quality begins to affect people's health in general; and b) would consider changing their own routine in order to protect their health.

The results for the combined data across all regions are presented in the table below, and reveal a clear pattern.<sup>6</sup> Canadians are most likely to believe air quality starts to affect people's health at the second level down from the most positive point on the scale, that is "fair" or "moderate," "yellow" or "orange," or a numeric value between 15 and 50. This indicates that as soon as the scale moves past this most positive point on the scale, the general perception is that health starts to become an issue.

These data also seem to confirm that, in fact, the majority of Canadians think about a clear threshold when it comes to air quality and health (for each question in this set, between 0 and 3 percent of respondents explicitly rejected the notion of a threshold, insisting that air quality affects health at any level). These data may also suggest that many believe that the most positive point on the scale indicates an absence of any air pollution (e.g. fully clean air).

## Threshold levels for AQI word, colour and numeric scales

Combined across regions\* 2004

	LEVEL AT WHICH AIR QUALITY STARTS TO AFFECT PEOPLE'S HEALTH	LEVEL AT WHICH AIR QUALITY IS BAD ENOUGH FOR YOU TO CONSIDER CHANGING YOUR ROUTINE
<b>Word scale (n=683)</b>		
Good	6	3
Acceptable	52	16
Bad/poor	39	75
Other/don't know	2	7
<b>Colour scale (n=302)</b>		
Green	12	8
Yellow	65	51
Red	17	33
Other/don't know	5	8
<b>Numeric scale (n=223)</b>		
0-15/25	13	5
16/26-50	46	28
51 plus	27	54
Other/don't know	14	14

\* Scales vary by region – this table presents results for combined data across all regions

### Q.40

*Thinking about this {word/numeric/colour} scale, at which of the following levels do you think that air quality starts to affect people's health ...?*

### Q.41

*And at what level of the Index do you consider the air quality to be bad enough to think about changing your routine ...?*

*Subsample: Those who are familiar with the particular scale/who think it is most useful*

6 The AQI scale points are similar but not quite the same in each region. The table presented on this page combines categories across regions in order to concisely portray what is a common pattern evident in all regions. The specific responses to these questions for each region are presented in the detailed banner tables that have been produced along with this report.

When the focus shifts to one's own health, there is a decided shift in the perceived threshold to the next level worse point on the scale. Canadians who say that health starts to be affected when air quality is "fair" or "26 to 50," then say it would have to be "bad" or "51 plus" before they would themselves consider changing their routine in response. These results show clearly that most people are not immediately inclined to alter their behaviour unless they believe the level of air pollution is quite poor.

This general pattern is evident in all three AQI formats, but it is noticeably stronger with the word and numeric scales than with the colour scale. This suggests two things: First, that the middle colour categories of "yellow" and "orange" carry a more negative or attention-getting connotation than their counterparts in the other scales. Second, that the colour scale may be the most effective of the three in sensitizing the population to poor air quality and the need to act to reduce exposure.

The observed pattern also holds across regions of the country, although differences in the scale points lead to some variation in response. For instance, Quebecers, who have only a three-colour scale (green, yellow, red) are more likely than other Canadians to pick red

as the level they would act on (50%). In Ontario, only 16 percent identify red as the threshold for action, but a plurality of 37 percent set their threshold at "orange."

There is limited variation in response to these questions across demographic strata of the population. On the word scale, some groups are comparatively more likely to say that health effects only start when the AQI reaches "bad" or "poor" (larger urban centres, men, allophones, no children in the home, no respiratory illness or pollution-related health problems, not sensitized to local air quality problems). But when it comes to naming a level at which people might be prompted to act, most of these differences disappear, and the only groups more likely to hold out until conditions become "bad/poor" are Canadians under 45 years of age and those who do not have children at home.

On the colour scale, the threshold for health effects is more apt to be yellow/orange than green/blue among men and Canadians under the age of 30, while it is those aged 60 plus who are most likely to set this threshold at red, and no clear differences emerge in terms of the threshold for action. The numeric scale shows the least evidence of any variation across segments of the population.

## Value of specific air quality information

*The public places clear value in receiving each of five specific types of air quality information, and none emerge as of greater priority than the others. At the same time, the overall strength of this interest in such information is lower than in 2001.*

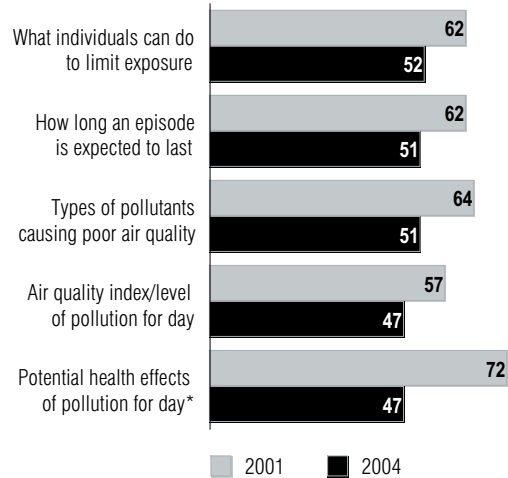
The survey also probed Canadians on the degree of value they would personally place in receiving each of several distinct types of air quality information in their community. As in 2001, most Canadians indicate that each type of information would be of at least some use to them, and roughly half say it would be very useful. But the proportion who rate each type of information as very useful has declined since 2001, particularly in the case of learning more about potential health effects (although this may be in part a function of a slight change in the wording of the question).

One in two Canadians say they would value information on what individuals can do to limit personal exposure to air pollution (52%), a forecast of how long an air pollution episode is expected to last (51%) and the types of pollutants causing poor air quality (51%). Somewhat fewer place this degree of value in knowing the air quality index or level of pollution for that day (47%), and the potential health effects of pollution for the day (47%).

Expressed interest in all types of air quality information is somewhat stronger among Ontario residents (especially in Toronto), women, Canadians sensitized to local air quality issues, those with health problems linked to air pollution and those who are most familiar with the AQI.

## Usefulness of specific types of air quality information

Very useful 2001-2004



\* Wording different in 2001

Q.42

*Please tell me if the following information about air quality would be very, somewhat, not very, or not at all useful for you to know ... The potential health effects of the pollution level for the day ... What individuals can do to limit their exposure to air pollution ... The types of pollutants causing poor air quality ... A forecast for how long an air pollution episode is expected to last ... The air quality index or level of pollution for the day.*

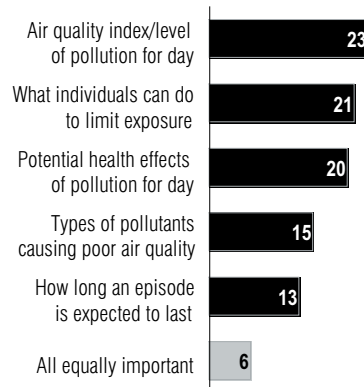
Given that all five types of air quality information are considered valuable by a significant proportion of the population, the survey took a further step to discriminate among these by then asking respondents to indicate which one of the information types they rated as very useful would be the *most* useful to them (forcing a single choice).

Again, the results do not reveal a strong preference. Among those rating more than one of the information types as very useful, roughly one in five each assign their strongest preference to the air quality index/level of pollution for the day (23%), what individuals can do to limit personal exposure (21%) and potential health effects of pollution (20%), while fewer pick the types of pollutants (15%) or forecasts of how long an episode will last (13%). Six percent insist that all five types of air quality information is of equal importance or value to them.

Preferences are largely consistent across the population. Information about how to limit personal exposure is more apt to be the top priority among women, Canadians under 45 years of age and those least familiar with the AQI. It is Quebecers and Canadians without a high school diploma who are most likely to insist that all five types of air quality information are of equal importance to them.

### Which type of information would be most useful?

Among those rating items as very useful 2004



#### Q.43

*You indicated that several of these types of information would be very useful. Which one of them would you most want to know?*

*Subsample: Those who indicated several types of information would be very useful at Q.42 (n=930)*

## Preferred frequency of air quality announcements

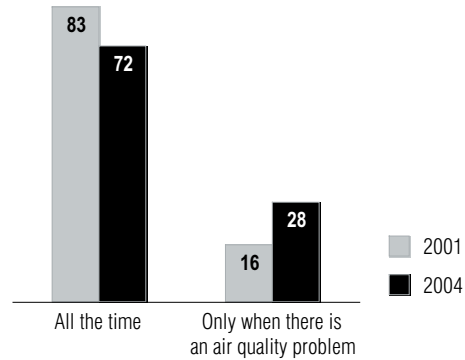
*Seven in ten Canadians believe that air pollution information should be provided to the public on a continual basis, rather than only when there are unsafe levels.*

An important communications question is to determine how frequently air quality information – air pollution advisories in particular – should be broadcast to the public. The answer is in part a health-based one in terms of determining at what level of air quality the population should be alerted to take actions to reduce exposure. But from the public’s perspective, how often might they want to receive such announcements?

Results from the survey reveal a clear preference on this latter question. Seven in ten (72%) Canadians think that air pollution information should be provided to the public all of the time (e.g. continually), compared with 28 percent who say it would be better if announcements were given only when “there is an air quality problem.”

Views on this question vary across the country. The strongest preference for continual reporting is expressed by Canadians in eastern Canada (73% to 77%), and lower in the west (64% to 68%). This preference is also more widespread among women (75%), Canadians aged 18 to 29 (80%), those sensitized to local air quality conditions, those with health problems linked to air pollution (82%) and those most familiar with the AQI (80%).

When should air pollution information be provided to Canadians?  
2001-2004



Q.44

*Do you think that air pollution information should be provided to Canadians ...?*





## METHODOLOGY

The findings are based on the results of interviews conducted by telephone with 1,500 adult Canadians between October 25 and November 8, 2004.

### Sample selection

The sampling method was designed to complete approximately 1,500 interviews among Canadians aged 18 years or over, within households randomly selected across Canada (excluding those living above the 60th parallel, i.e., those in Nunavut, the Northwest Territories and the Yukon). The sample was designed to complete interviews with a representative sample of citizens across the country, stratified across six designated regions to ensure meaningful data and analysis at the regional level.

An oversample was applied to the three largest urban centres to provide for sufficient subsamples in each for analysis. The Prairie sample was limited to the metropolitan areas of Winnipeg, Regina and Saskatoon, which are the only areas in this region for which there is an air quality index measured and reported. The final sample distribution is as follows:

### Sample distribution

	WEIGHTED N=1,500	UN-WEIGHTED N=1,500	MARGIN OF ERROR
Canada	1,500	1,500	± 2.5%
Atlantic Canada	116	200	± 6.9%
Quebec	362	350	± 5.2%
Montreal	157	209	± 6.8%
Ontario	572	442	± 4.7%
Toronto	258	252	± 6.2%
Prairies (Winnipeg, Regina, Saskatoon)	105	103	± 9.7%
Alberta	149	128	± 8.7%
British Columbia	196	277	± 5.9%
Vancouver	116	166	± 7.6%

Environics uses a sampling method in which sample is generated using the RDD (random digit dialling) technique. Samples are generated using a database of active phone ranges. These ranges are made up of a series of contiguous blocks of 100 contiguous phone numbers and are revised three to four times per year after a thorough analysis of the most recent edition of an electronic phonebook.

Each number generated is put through an appropriate series of validation procedures before it is retained as part of a sample. Each number generated is looked up in a recent electronic phonebook database to retrieve geographic location, business indicator and “do not call” status.

The postal code for listed numbers is verified for accuracy and compared against a list of valid codes for the sample stratum. Non-listed numbers are assigned a “most probable” postal code based on the data available for all listed numbers in the phone exchange. This sample selection technique ensures both unlisted numbers and numbers listed after the directory publication are included in the sample.

### Telephone interviewing

Interviewing for this survey was conducted at Environics’ central facilities in Toronto and Montreal. Field supervisors were present at all times to ensure accurate interviewing and recording of responses. Ten percent of each interviewer’s work was unobtrusively monitored for quality control in accordance with the standards set out by the Market Research and Intelligence Association (MRIA). A minimum of five calls were made to a household before classifying it as a “no answer.”

From within each household contacted, respondents 18 years of age and older were screened for random selection using the “most recent birthday” method.

The use of this technique produces results that are as valid and effective as enumerating all persons within a household and selecting one randomly.

### Completion results

A total of 1,500 interviews were completed between October 25 and November 8, 2004. A sample of this size will produce a sampling error of plus or minus 2.5 percentage points, 19 times out of 20. The margin of error is greater for results pertaining to regional or socio-demographic subgroups of the total sample.

The effective response rate is nine percent: the number of completed interviews (1,500) divided by the total dialled sample (23,204) minus the non-valid/non-residential numbers, the numbers not in service, and ineligible households as well as those that presented a language barrier (6,423). The actual completion rate is 20 percent: the number of completed interviews (1,500) divided by the number of qualified respondents contacted directly (7,703). The following table presents the detailed completion results

### Completion results

	N	%
A. Total sample dialled	23,204	100
Household not eligible	72	*
Non-residential/not in service	5,697	25
Language barrier	654	3
B. Subtotal	6,423	28
C. New base (A – B)	16,781	100
D. No answer/line busy/ not available	9,078	54
Refusals	6,120	37
Mid-interview refusals	83	1
E. Subtotal	15,281	91
F. Net completions (C – E)	1,500	9
Completion rate (F / [C – D])		20

\* Fewer than one percent

Note: totals may not sum to 100 due to rounding.

SECTION THREE:  
QUALITATIVE ASSESSMENT OF  
NEW AQI COMMUNICATIONS CONCEPTS

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## INTRODUCTION

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The Environics Research Group is pleased to present this report to Health Canada on qualitative findings related to the testing of the effectiveness of communications materials relating to a proposed new Air Quality Index which incorporates health messages.

### Background

Air pollutants such as ozone, particulate matter, nitrogen dioxides, sulphur dioxide and carbon monoxide have been clearly linked to a variety of health effects, including premature mortality, asthma, bronchitis, increased respiratory distress symptoms and other adverse end points. Certain populations are especially vulnerable to adverse health effects, including children, the elderly and those with pre-existing cardio-respiratory disease. Individuals who exercise or do strenuous activities outdoors are also susceptible to the negative effects of air pollution.

Canadians rely on the Air Quality Index (AQI) to inform them on a daily basis about air pollution conditions in their community. Currently, AQIs are issued by provinces and some municipalities, with the federal government providing scientific, monitoring and other technical support in the form of air quality forecasts. However, the different provinces and municipalities across Canada that issue AQIs do not currently calculate or present them in the same way, nor is there any consistency in the health messaging.

A process was initiated in June 2001 to improve the state of Canadian AQIs with the objective of making them more reflective of human health concerns. The federal government has a long history of involvement in the AQI and is currently facilitating the process to develop a national health risk-based AQI.

To support this initiative, Health Canada has identified the need to investigate Canadians' attitudes and experiences with respect to a number of issues related to the AQI, including Canadians' level of familiarity with the index, the frequency with which they currently use the index, Canadians' preference with respect to the format of air quality messages, the likelihood of a change in behaviour when confronted with an air quality warning, and the exact nature of this possible change of behaviour. This work is intended to enable Health Canada, its partners and stakeholders to develop a uniform method of calculating and presenting the AQI in a way that will best inform the target audience, as well as provide insights into how to frame a social marketing campaign designed to get Canadians to change their behaviours during poor air quality events so that adverse effects are avoided.

### Research objectives

Health Canada's Air Health Effects Division in the Healthy Environments and Consumer Safety Branch, in partnership with Environment Canada's Meteorological Services, is beginning to undertake outreach and health promotion activities supporting the AQI stakeholder process. To facilitate this work, the program required input from Canadians on their current use of the AQI, and whether this influences their behaviour. This was to be accomplished through public opinion research involving quantitative and qualitative methods. The findings from this research will be used to guide the development of health messages to effectively communicate the AQI to Canadians with respect to the health risks associated with poor air quality, as well as promote actions that will protect their health and the environment.

The specific objectives of the research are to:

- Build on the previous research conducted in this area;
- Determine the familiarity of Canadians with the AQI in their province and municipalities (where applicable);
- Determine the behavioural patterns, attitudes and beliefs of the general public regarding the AQI in order to develop a clear national health risk-based AQI;
- Determine what air quality messages Canadians currently receive;
- Determine Canadians' attitudes and expectations with respect to air quality health messaging in order to develop effective and informative messages designed to enable behaviour change; and
- Collect input and recommendations from focus groups on the health messages that would be most appropriate and useful for the general public.

The research consisted of three distinct phases: a) post-event telephone surveys during or immediately after air pollution episodes in the Fraser Valley and the Greater Toronto Area (August 2004) and on the Island of Montreal (February 2005); b) the autumn 2004 national survey; and c) focus groups with selected segments of citizens in several communities across the country (February/March 2005).

These results are based on a series of 12 focus groups conducted in Toronto, Montreal, Fredericton, Winnipeg, Kelowna and Vancouver between February 22 and March 2, 2005 with members of the general population. Participants were recruited according to a set of criteria that placed them in one of the following categories: sensitized to air quality issues, and not sensitized to air quality issues.

Those who are sensitized to air quality issues (sensitized) rate their community's air quality as only fair or poor, and also believe that air pollution is a hazard to

health. In contrast, those who are not sensitized to air quality issues (not sensitized) are more likely to rate their community's air quality good or excellent, and to consider that air pollution is not a hazard to health.

From the previous phases of research, we learned that those in the sensitized segment of the population are more likely to have seen or heard air quality or smog advisories, looked for such information, and taken action as a result of these advisories.

In each of the six cities, separate focus groups were held with each of these subgroups. All focus group sessions, whether with sensitized or not sensitized participants, included a few individuals with health problems, either themselves or among others in their households.

There were nine focus groups conducted in English and three in French (two in Montreal and one in Fredericton). All of the participants met the criteria defined and demonstrated in the recruitment specifications. In all, 100 people participated.

This report provides an overview of reactions to the materials presented.

Specific elements tested and discussed in all groups included:

- Greyscale bar of the proposed air quality index (C1). This is simply the scale for an air quality reading from 0 to 10+ with no text.
- Colour version of the proposed index (C2). The same as C1 but in colour.
- Colour bar, number, health risk descriptor and forecast (C3). This incorporates a colour version of the scale, a prominent number showing the current air quality reading, a headline message in terms of the relevant health risk associated with such a reading and a forecast in the text.
- Category labels (C4). These list the terminology that could be used to inform people of the level of health risk or precaution required for each of four ranges on the scale (0-3, 4-6, 7-10 and 10+).

- Health risk messages (C5). Specific health risk messages that vary according to the level of the air quality reading and may provide advice to those with specific health problems.
- Air and health facts (C6). A list of potential ‘factoids’ about air quality and/or health that could be included in the overall AQI communications piece to inform and educate.
- Printed sample of complete proposed index (C7). The full AQI communications piece as it might appear in a newspaper.
- Possible names for the new index.

(Copies of these materials can be found in the Appendix identified as above.)

Each focus group session was conducted according to a moderator’s guide developed in consultation with the Health Canada project authority. The same discussion guide was used for all groups, in both English and French. Copies of the guide, along with the recruiting screener, can be found in the Appendix.

Please note that, as with all qualitative results, these findings are not statistically representative of the population as a whole. The objectives of this research initiative are

exploratory in nature and therefore best addressed qualitatively. Qualitative research provides insight into the range of opinions held within a population, rather than the weights of each of the opinions held, as would be measured in a quantitative study. The results of this type of research should be viewed as indicative rather than projectable. The intent of this research is to provide insights into the range of issues and opinions, rather than the weight of those opinions, among the Canadian general public.

All research work undertaken by Environics is conducted in accordance with the professional standards established by the Marketing Research and Intelligence Association (MRIA), which incorporates the former organizations known as the Professional Marketing Research Society (PMRS) and the Canadian Association of Marketing Research Organizations (CAMRO).





## SUMMARY OF KEY FINDINGS

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There was a positive reaction to the proposed Air Quality Index material (including health messages) as presented across the country. In terms of content and design, the materials were well-received, with only minor criticisms and dislikes. A key strength of the proposed format and communications is that all focus group participants, whether sensitized or not sensitized, reacted positively – just with different levels of enthusiasm.

### Overall reaction to test materials

- Overall, the index as presented in a proposed print form was largely received enthusiastically across the country. Positive comments far outweighed the negative comments in all sessions. Many of the more negative comments often tended to be somewhat minor concerns with wording.
- The basic graphic components (the scale, the large numeral, the colours, arrows and icons) were well-liked in all groups. Provided this tool appears in newspapers in colour, it will attract their attention, but many participants felt that it would be much less likely to catch their eye if it were to be reproduced in black and white in the newspaper.
- Each individual element that makes up the total index was, on the whole, well-received, although most components had a few detractors.
- Simple, unambiguous and non-alarmist words and phrases were strongly preferred for the Category Labels to describe the ranges (0-3, 4-6, etc.). The most effective and popular terms were those such as “low,” moderate,” “high” and “very high health risk.”

- The most effective health risk messages were those which addressed specific target groups (such as children and the elderly), as well as those providing cautionary advice and which were concise. There was a broad acceptance of separate health risk messages for the general population and those with health risks, as well as for the inclusion of the recommendation to seek a doctor’s advice.

### Sensitized and not sensitized segments

The greatest differences in terms of reactions and attitudes were not found in the areas of gender, age, city or even whether someone had health problems in the household. The differences were clearly noted between the sensitized and the not sensitized segments of the population.<sup>1</sup>

- Although the proposed index as presented to participants was favourably received across the board, it was noticeable that the level of enthusiasm for it, and all of its individual components, was greater among sensitized people.

### Category labels

- Simple terms were preferred for the category labels such as “low”, “medium” or “moderate, high and very high health risk.” There were a number of negative reactions to terms such as “caution” and “hazard” that were seen as too alarmist. In several groups participants raised objections to the phrase “sensitive people” and felt that this was inappropriate. Comparative words such as “reduced” and “increased” were also discussed as not being very meaningful without any specific terms of reference.

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<sup>1</sup> Those who are sensitized to air quality issues (sensitized) rate their community’s air quality as only fair or poor, and also believe that air quality is a hazard to health. In contrast, those who are not sensitized to air quality issues (not sensitized) are more likely to rate their community’s air quality good or excellent, and to consider that air quality is not a hazard to health.

## Health/risk messages

- Most participants were positive about the messages tested, despite being critical of certain words and phrases. There was criticism of any health messages that were considered too long or too wordy. These messages should be concise and appropriately targeted.
- On balance there was a preference for health risk messages to be used for a range on the scale (such as 0-3, 4-6) rather than separate messages for each number of the index, as many participants felt that it would be too much, and too confusing, to have 10 or more different health messages.

## Air health facts

- Provided careful consideration is given to which facts are used, this is an element that will be popular with many people. Those deemed useful were those that informed and educated (particularly “a full bus takes 40+ cars off the road,” and “children inhale more pollution...”) – a revelation for some parents – and those that provided ideas as to what people can do.
- The sensitized participants reacted much more favourably overall to these air and health facts than did their not sensitized counterparts. Some not sensitized participants considered this set of statements as being part of a political or environmental agenda.

- It will be necessary to exclude technical terms (such as “ozone,” “particulate” and “atmospheric transportation”) as most participants did not understand them, and those statements that may be viewed as obvious or any that are not clearly explained to the average consumer (e.g. “make sure your indoor air is healthy”). Some of these concepts could be fine if reworded.

## Index names

- The greatest support was for the term “Air Quality Index,” partly because of the familiarity (as the term is currently in use in some areas), but also because it is simple, easy to abbreviate and appropriately descriptive of the tool.
- Many participants, and particularly the not sensitized, had difficulty with the notion of health being included in the name of the index. The more popular of the terms to include the word “health” were “Air Health Index” and “Air and Health Index.”

## Conclusions

- A key conclusion to be drawn from this study was that there was strong support from almost all participants for a nationally standardized air quality index.
- Based on these sessions, Health Canada and Environment Canada are clearly on the right track with the proposed new AQI with health risk messages in terms of both the overall concept of a national approach, and the design and content as tested.

## MAIN FINDINGS

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To set the context for the discussions, participants were told that Health Canada and Environment Canada, together with various stakeholders, are developing a nationally standardized system for communicating air quality or the level of pollution in the air. No other background information was provided as the intention was to gauge their reactions to the various elements that make up the proposed air quality index.

The approach used in each session was to gradually build up to the full AQI tool. At first, participants were shown just a greyscale bar with a scale running from 0 to 10+ – this being the most basic element of the proposed index. As with each set of stimuli material shown to focus group participants, several examples of the scale were presented, i.e. readings on the scale of 1, 5 and 10, to ascertain their level of understanding. Some of the materials were shown to them for only a few seconds (to simulate a reader paging through a newspaper). In other instances, particularly with descriptors or health messages, participants were presented with several options or alternative approaches, and asked for their reactions and the reasons for these reactions.

### Air quality index bar with numbers only

**Greyscale bar.** This is simply the scale for an air quality reading from 0 to 10+ with no text. See Appendix for a sample of the materials shown to participants. (C1)

Participants were initially given a few seconds to look at a series of three sheets featuring the greyscale bar with the numbers only, and no text. The three sheets depicted three readings (of air quality level) on the proposed new scale, these being 1, 5 and 9, with the grey background changing from light to dark as the reading increased. The purpose of the brief look at these was to simulate glancing through a newspaper.

Most participants indicated that if they saw this in a newspaper, it would catch their eye, and in several of the sessions, participants spontaneously mentioned that it would be preferable, and even more eye-catching, if it appeared in a newspaper in colour.

Overall, from just a brief look at the greyscale bar with the numbers only and no text, there was a good level of understanding of this basic part of the tool.

*“I think it would be a great system.”*

Most participants easily associated the greyscale to a scale indicating the level of air quality. Many also realized that as the numbers increased and the shades became darker, this was indicating a worsening of the air quality or increased pollution.

*“The higher the number, the darker the panel, means smog in the air.”*

*“A scale from light to dark and low to high numbers. If you relate it to air quality, the darker is dirtier and the lighter is cleaner air.”*

Several participants in most sessions remarked that the greyscale bar is a clear indicator that is easy to understand. There were, however, a few participants who did not understand the scale and suggested either that the darker shading and higher numbers meant better air quality or that the mid-point of the scale (a rating of 5) was preferable. These comments tended to come from some of the older participants.

In some groups, there was at least one participant who noted the double arrows at the top of the scale. Those who did notice also tended to conjecture that this implied that the rating could go beyond 10 on the scale.

*“It means it can get worse – it’s not the top of the scale at 10.”*

*“There’s something after 10, the arrows suggest that.”*

The small forecast arrows in the greyscale bar were mentioned spontaneously by only a few participants. When probed, some of the participants were unsure as to the meaning of these symbols, in particular the straight line indicating stable (as some interpreted this as a minus sign). However, there were one or two participants in many of the groups who correctly interpreted these graphics.

*“It could be a forecast.”*

*“The arrow – that would indicate some sort of change in the air quality.”*

There were even some participants who noticed that the level of shading in the bar around the number was the same as the background to the larger panel.

*“The intensity around the number matches the background down below.”*

At this stage, there were no noticeable differences between the ‘sensitized’ and ‘not sensitized’ groups in terms of levels of recall, understanding or appeal.

**Colour bar.** This is the scale for an air quality reading from 0 to 10+ with no text and the same as C1 but in colour. See Appendix for samples of materials presented. (C2)

Many participants reacted positively to the introduction of colours. They felt that the use of colour added a great deal to the scale and, in particular, gave meaning to it.

*“The colour makes a difference – it almost explains itself.”*

*“The colour is adding a kind of realism – blue sky to dark sky.”*

*“The colours are good, they occur in nature.”*

The background colours were clearly interpreted by many participants as clear blue sky (and positive air quality) through grey to brown, suggesting murkiness and smog or high levels of pollution.

In the colour version of the bar, the forecast symbols and double arrows at the top of the scale were much clearer and more noticeable to the participants. With the double arrows being red in the colour version, this was quickly interpreted in many of the groups as a dangerous level of pollution.

*“The red arrows at the end are almost like a warning, if it reached that.”*

Still at an early stage in the proceedings, and with no text of any kind shown to the participants, several interesting comments or suggestions were spontaneously made. A few participants volunteered that the scale should incorporate some kind of message to explain what the level of air quality means to one’s health. Other participants spontaneously suggested that the scale should include text that tells people how they can reduce pollution. Some suggested that this information should be on a website, while others said they would use it to plan their day.

*“It should be on a website such as Environment Canada, then you can go there and look at the air quality.”*

*“I would plan my activities around that.”*

Again, there were no major differences between the sensitized and not sensitized groups in terms of their reactions to the colour version of the index.

### Air quality index bar with numbers, health risk descriptor and forecast

This incorporates a colour version of the scale, a prominent number showing the current air quality reading, a headline message in terms of the relevant health risk associated with such a reading and a forecast in the text. See Appendix for samples of materials presented. (C3)

Most participants in all groups reacted positively to this item. The selection of colours used was seen as appropriate, particularly the red for the 12 rating, which alarmed some respondents, but did not necessarily surprise them. Some likened this to the red weather warnings on the Weather Network/Met om dia.

Many participants also liked the large numbers used to indicate the air quality rating. Many said that they would pay attention to this information and look at all or most of it. Then, after a while, and particularly with those who are not at risk personally (in terms of health), they suggested that they will simply check the colour and the number for the day. Many expressed the view that they will soon get used to this scale and will know what levels they can tolerate, and at what point, if any, the level becomes a problem for them.

The health information was considered important for many participants. However, it should be noted that here, for the first time in the sessions, we observed substantial differences in reactions by the different sub-groups (the sensitized and the not sensitized). Many of the not sensitized participants considered the health risk information to be useful or important for others, but not for themselves, or viewed it as too strongly worded and even alarmist.

*“One of my kids has asthma, anybody who has problems, but not me.”*

*“If this is being directed to the elderly, the writing is too small.”*

The most startling reaction in this vein came from a not sensitized individual (a physiotherapist at a hospital in Kelowna) who remarked:

*“A person with asthma would see red as very dangerous, whereas for myself, when the fires were going on I could still go and ride. My (physical) condition as far as air quality is quite a bit higher than the patients that I have. Red to them might not be red to me.”*

Other examples of this attitude from the not sensitized participants include:

*“All of us know someone who has asthma or respiratory problems, but we wouldn’t be alarmed ourselves.”*

*“For the elderly, I think that gauge would be useful.”*

*“Usually, a 5 would be more moderate – the warning is more harsh than necessary.”*

The sensitized participants often mentioned that air pollution is a problem and they saw this tool as a useful way to make everyone aware of its potential impact on human health.

*“I also think it’s good for everyone to be aware that there is a pollution problem.”*

It was also only sensitized participants who suggested that this information should be published on the front page of the newspapers, rather than the weather page, so that they do not have to go looking for it. Sometimes spontaneously, and at other times when they were prompted, most reacted favourably to this information being published not only in newspapers, but also on radio, television and websites.

Many participants were positive about the forecast aspects of the index (now with the addition of forecast information in text form). With this additional information, there was an increased level of interest in the forecast arrows and also support for the forecast text which explains it.

However, in almost every session, there were one or two sceptics who questioned the accuracy of a forecast. There were two reasons for this scepticism. First, these participants wondered how far ahead forecasts of air quality could be given. Second, they were critical of weather forecasts in general, as they are of the opinion that these are often incorrect, and consequently wondered how accurate air quality forecasts would be.

Even with this amount of information, many participants, more often sensitized people, considered the material being tested to be a useful tool for planning their daily activities. For some participants, whether they would change their planned behaviour or not would depend on the actual number (i.e. the air quality rating) and also on the forecast, while others queried the reliability of the geographic area to be covered by a rating and a forecast.



*“How would we know what it is like out in the valley?”*

*“It’s almost as useful as a weather forecast, you don’t fully depend on it, but it gives you a guideline, especially when it’s high.”*

Some of the concerns about the usefulness of the forecast were based on not having sufficient information, such as the starting point for the forecast, and the time period for it.

Major differences were clearly observed in terms of level of enthusiasm for the index as a planning tool, when one considers the reactions of the sensitized and the not sensitized groups. The sensitized participants were much more likely to indicate that they would change their plans based on the index.

*“It’s important, it gives you ‘planability’.”*

*“If the arrow was pointing up, I’d have second thoughts about doing something.”*

*“This is a good tool to tell whether to go for a hike, etc.”*

By contrast, the not sensitized participants were more likely to reject the forecast and accompanying health messages in favour of using personal judgement.

*“Now people are going to start looking at the paper and changing their lives around based on this air meter. I think it should be more specific. If you’ve got good health and no breathing problems, you don’t need to worry too much. If you see 12, you might say I’m going to skip baseball practice and yet you wouldn’t even notice.”*

*“The 12 – is it meant for everyone? Or is it just warning people with health problems?”*

*“If the first time it’s 12 we go outside and we’re fine, we’ll ignore future 12s.”*

While the not sensitized person may well have rejected high ratings and forecasts of deteriorating air quality, only the sensitized would express the view that even lower levels on the index may be harmful to people.

These kinds of comments arose in several of the sessions with sensitized participants. It was apparent that, while there is no threshold in the minds of sensitized people (i.e. there can be health effects for some people at any level of air quality), the not sensitized segment believe that everyone has a threshold and they will learn what it is for this new index.

*“There’s still some danger out there even when it’s blue.”*

In a few sessions, participants mentioned the usefulness of this tool as a nationally recognized rating system. It would be particularly useful for those who travel, since in addition to checking the weather in advance of travelling to a particular destination, they would also check the air quality rating. In one of the Montreal groups, a few participants suggested that it would be important that the scale and other information be compatible with international standards, as this would be useful to those who travel.

*“If it’s national, right across Canada, it would be a good idea, for when we go to Toronto or Montreal.”*

## Health risk category names or category labels

These present the terminology that could be used to inform people of the level of health risk or precaution required for each of four ranges on the scale (0-3, 4-6, 7-10 and 10+). See Appendix for samples of materials presented. (C4)

In the English focus groups, four alternative sets of category labels were shown to participants to obtain their reactions and feedback. In the French groups, there were three alternative sets of labels.

The overriding preference from participants was for short and simple terminology that would be easy for everyone, even children, to understand. The preferred labelling would be from a combination of Label #1 and Label #2 – “low health risk, moderate health risk, high health risk, very high health risk.” The second most effective wording was “low health risk, moderate health risk, increased health risk, high health risk,” but there were several participants who found the word “increased” too undefined. There was a dislike of terms that were considered vague or undefined and

also for words and phrases that seemed alarmist to them. As one might expect, it was the not sensitized participants who were more likely to describe something as alarmist.

Reactions were obtained to various options in terms of category labels based on four ranges of index reading (0-3, 4-6, 7-10, and 10+).

**Label #1: Low health risk/moderate health risk/  
increased health risk/high health risk**

This terminology was considered to be acceptable, and even preferred by some, as most of the language is very simple (low, moderate, high). Concerns were expressed with regard to the use of the word “increased,” which for some participants did not sound sufficiently harsh for a rating of 7-10. This word was criticized more for the fact that it is not very meaningful as there is no point of reference. Some participants disliked the use of the term “health risk” in an air quality index. A suggested modification to the terminology was: low/medium/high/very high health risk.

**Label #2: Minimal health risk/moderate health risk/  
high health risk/very high health risk**

Those participants who preferred this set of terminology did so because it is seen as plain and simple. There were mixed views on the word “minimal” as it may suggest less risk than there is for some people, and use of the word “low” was preferred by some participants.

A few concerns were also expressed with the term “very high health risk” as even this phrase was considered alarmist by some. A suggested modification to this set of labels was: low/moderate/high/very high health risk (and therefore very similar to the revised labels for the first set mentioned previously).

In several of the focus groups, it was stated that these first two sets of terms are easy enough for everyone, including children, to understand.

**Label #3: No precautions/precaution level for  
sensitive people/caution level/hazard level**

There were very mixed and even polarized reactions to these terms. Those who found the terminology ap-

propriate liked the words “caution” and “hazard” since to them, these words clearly spell out the dangers at the higher levels. But there were many participants who reacted negatively to these terms and each identifier had its detractors. “No precautions” was criticized as they felt that, particularly at the top end of 0-3, there would be some people who would experience problems. Others, more often the not sensitized, liked this phrase as it gave everyone carte blanche to do as they please.

The term “precaution level for sensitive people” found detractors in most groups, as they had problems with the term “sensitive people.” They did not generally accept this as an appropriate term to reference those who have health problems. Those opposed to this set of labels were also critical of “caution” and, in particular, “hazard” as being extreme or alarmist words. It was also said that “precaution,” “caution” and “hazard” levels need to be defined or more clearly differentiated in some way.

**Label #4: Reduced health risk/health risk for  
sensitive people/increased health risk/high health risk**

Although a few participants found this set of labels to be most appropriate, it was again criticized in many sessions. “Reduced” and “increased” were both referred to as undefined as there is no point of comparison. As with the previous set of terms, again the phrase “sensitive people” was deemed inappropriate.

In the three French groups in Montreal and Fredericton, a majority of participants in each group preferred option/scenario #1 (see Appendix A4). They justified their preference by saying that these statements are more concrete and actionable, particularly for those people who have health problems. Some participants criticized the use of the word “risque” as they felt it was a negative word. A few in each of these three focus groups perceived that the words “modéré” or “accru” are vague and not indicative of the preventive actions to be taken, unlike the first statements in scenario #1. In context, a few participants felt that the words “danger” and “attention” are both too general and too alarmist. Most participants felt that when the number on the scale is high, people will be prepared to read more detailed information, and the reverse will be true when the numbers are low.

## Health risk messages

These are specific health risk messages that vary according to the level of the air quality reading and may provide advice to those with specific health problems. See Appendix for samples of materials presented. (C5)

In total, 12 different health risk messages were tested with participants to obtain their reactions to the suitability of these messages for the various readings on the index.

Initial health risk messages tested:

Many of the health risk messages used in the sessions in the first three cities (Toronto, Montreal and Fredericton) were criticized for being too wordy.

*“Too much information – the more you put in, people won’t read. People will just look at the graphics.”*

*“They’re all so wordy, too much reading.”*

*“It’s too long-winded, people won’t read it.”*

(These health risk messages were then modified for the second week of groups in Winnipeg, Kelowna and Vancouver.)

The word “ideal” and the phrase “good for getting some fresh air” were criticized as they were seen as giving an opinion, and also because air quality is only one factor and therefore such statements might not be appropriate. For the same reasons the phrase “no precautions necessary” was also criticized by some participants.

*“No precautions necessary may not be the case. This is just air quality, what about UV?”*

Of the message options for the 7-10 range tested in the first week (see Appendix C5), the first of the options was considered much more appropriate and effective. This message identified specific ‘at risk groups’ – “Children, the elderly, asthmatics and people with heart or lung disease should consider reducing exertion. Follow your doctor’s advice...” There was also a broad acceptance of the recommendations to seek a doctor’s advice.

*“Pretty direct about it. There are the people who are going to have trouble, children, the elderly and people with heart or lung disease...that’s a good thing, very easy to follow.”*

Several participants, in particular in the sensitized groups, felt that the health messages, when the air quality level was above 10, were not strong enough. It should be noted here that, in the materials presented to participants, there was less information provided when the reading was above 10 than when it was between 7 and 10, and they felt that this was not logical. When prompted as to what should be said, participants recommended advising the ‘at risk’ population to stay indoors. This sentiment carried over to the second week of groups, as there was still little information provided in the message for an index reading of 10+ when compared to the 7-10 category.

During the final six groups, not only were modified health risk messages used, but participants were also presented with some examples of messages that might be used for each specific rating number on the scale, rather than for a range such as 0-3, 4-6, etc.

Reactions to the revised messages for air quality ranges were generally positive. However, several specific elements were criticized.

### 0-3 scale

Some participants in the sensitized groups reacted negatively to the suggestion that “no precautions are necessary” even for the at risk population when the reading is 0 to 3.

*“There are always precautions necessary for the at risk population, at 3 they are at risk. When pollution gets to 3 they do still have a problem.”*

### 4-6 scale

The 4 to 6 message includes the phrase “during peak pollution periods”, but participants expressed that they have no idea when these periods occur, and that they would require further explanation.

Some participants were concerned about the use of the term “at risk population” which in other contexts



carries a different meaning than here where it is referring to people with health risks. Revised wording based on the term “health risks” was suggested.

A concern that was raised regarding the message for the 4-6 range was that it suggested reducing physical exertion. Some saw this as an excuse that some might eliminate exercise. On occasion, the view was expressed that such recommendations fly in the face of efforts to increase people’s levels of activity (because of increasing obesity, etc.).

### 7-10 scale

These messages were generally regarded, and in particular by the sensitized participants, as the best of all messages presented as they were very clearly defining the risk and to whom these apply.

*“The 7-10 message is really well laid out, gives explanation, target people and suggestions.”*

### 10+ scale

The major criticism of the health message at the 10+ rating was that it did not seem to be strong enough in terms of the warnings to people.

*“It’s worse, but it provides less information.”*

*“Not stringent enough in warning people.”*

Again, as we previously noted, the not sensitized groups were more likely to see the health risk messages as intended for those with health problems, rather than for the general public and themselves.

*“You would only react to these based on your own experience.”*

However, overall most participants in the English groups, despite being critical of certain words and phrases, were positive about these messages.

*“Good information, I think. I feel a lot better about this scale with this information added to it.”*

*“Good to have.”*

*“It helps with your decision-making, what you decide to do.”*

Separate messages for each number on the scale:

Reactions were mixed to the idea of having a separate health message for each number on the scale. While some found it made more sense and was more appropriate, particularly as they felt there should be a difference between four points on the scale, others felt it would be too much, and too confusing, to have 10 or more different messages.

*“I think you’re getting too complicated with a message for each number.”*

*“Too much information and too much to have different messages for each number.”*

*“It’s too close together to change for every number – there are only four frostbite warnings.”*

*“I don’t know if it’s absolutely necessary to have one per number. But some of these messages are more specific – integrate some of these in the others.”*

**French feedback.** In the French groups (Montreal and Fredericton), the most common reaction in all groups was somewhat negative to the concept of having warning messages for different levels of air quality. Most participants felt that it is important to create an information system that informs the public of potential effects on health or of poor air quality, but many felt rather indifferent to the messages proposed for the 0-3 air quality conditions.

*“Pas nécessaire.”*

Many participants agreed that it is important to identify the people who are at risk. This is why they agreed with the messages for ratings of 7-10 mentioning children and the elderly.

In all francophone groups, but especially in Fredericton, quite a few participants were critical of the length of the warning messages.

*“Si c’est plus d’une ligne, c’est trop.”*

Many suggested that the reference to the doctor is unnecessary.

*“Si une personne a des problèmes d’asthme, elle le sait et fera ce qu’il faut.”*

*“Faut pas que le monde soit traite comme si il est stupide.”*

The discussion on the various levels (0-3, 4-6, etc.) produced the following reactions:

### 0-3 scale

- Many felt it is not necessary to have any message for this type of situation. A few, however, said it is good to introduce positive messages, and they were favourable to such an approach.
- Most people in the groups overall said that they would pay very little attention to these messages when the index was close to 0.

Also, as referred to with regard to the similar phrase in the first few English groups, some people commented on the use of the words “air frais” in the second statement, and they said there might be other health problems related to the temperature or humidity, etc.

### 4-6 scale

Almost everyone felt that the statements are too long and repetitive.

Some participants appreciated that those people in the ‘at risk’ segment were identified. A few suggested the inclusion of other groups like children, outdoor workers, and people who participate in outdoor sports or physical exercise.

Later in the discussions, the moderator told the participants that a reading of 4-5 on the scale would be quite common in their city. Many of the participants were somewhat surprised to learn this and felt that the warning messages could be overly alarmist or negative.

*“On va susciter un sur soucis de santé...faire peur au mode.”*

*“Peut créer des frayeurs inutiles...On sort bien même quand l’humidex est très élevé...Faut bien vivre.”*

*“On n’a pas besoin de dramatiser sauf quand c’est vraiment dangereux.”*

*“Il y a certes une préoccupation avec la santé physique. Ici, on affecte aussi la santé psychologique et émotionnelle, ce qui est tout aussi important.”*

### 7-10 scale

No one questioned the need for having more information when the situation requires it.

The mention of target groups was appreciated, but a few said the messages were too long and they would not read them. This being said, many recognized that people with health problems will be receptive to these warnings.

### 10+ scale

A few participants in each group said that they liked the reference to the general public. They expected that there would be more information than was provided here, since the situation at this level is problematic.

### Air health facts

A list of potential ‘factoids’ about air quality and/or health that could be included in the overall AQI communications piece to inform and educate. See Appendix for samples of materials presented. (C6)

Participants were shown a list of more than a dozen potential air and health facts. They were asked to read these facts and then comment on them.

Perhaps not surprisingly, the sensitized participants reacted much more favourably overall to the air and health facts than did their not sensitized counterparts. Although these facts were presented in ranges of air quality ratings such as 0-3 and 4-6, in several sessions, it was suggested that this was unnecessary. Not sensitized participants were the only people to consider this set of statements as being part of a political or environmental agenda.

*“I don’t like it – too much preaching what people should do. Tell them what the air conditions are, but don’t tell them what to do.”*

Some facts were much more effective than others. Those deemed interesting, important and useful were:

- A full bus takes 40 to 60 cars off the road
- Children inhale more pollution per kilogram of body weight than adults
- Air pollution can reach high levels even in parks and rural areas

The last two points, in particular, are facts that were not known by the majority of participants.

Other facts gave insufficient information, or were considered to be too poorly worded to be meaningful. This group would include the following:

- Ozone occurs in two layers of the atmosphere...
- According to recent research, diabetics may also be at risk from air pollution
- Make sure your indoor air quality is healthy (included in the first week’s sessions only)

Other facts were considered to be common sense or obvious and, therefore, of little value, such as:

- People who work outdoors may be at greater risk from exposure to air pollution

Despite the criticism of some individual statements in this list, the concept of having such facts as part of the tool was often well-received, particularly by the sensitized groups.

*“I think they’re great facts.”*

*“I like the ones about how we can affect it, allowing people to take ownership.”*

*“I didn’t know that about children, that’s important to know.”*

*“Good to have some preventative things, I like that – what can we do about it?”*

One suggestion that came up spontaneously in several groups was to call these facts “Did you know (that)...?”

**French feedback.** In the French groups, the more sensitized participants appreciated the purpose of these messages. Some of them had previously suggested the introduction of messages on the personal responsibility of every citizen regarding air quality and the environment. Many suggested that the messages should always be short, direct and actionable.

Messages that are vague or without direct correlation to a situation (e.g. Il y a deux sortes d’ozone...) were rejected by many participants.

Many appreciated the messages on the negative impact of cars, but in Fredericton, several said there is not a lot they can do because of the poor quality of public transit in the city. In Montreal, many said the message was clear – use the bus more.

A few participants suggested that these messages should be part of a larger communication campaign on TV, radio, etc.

Several participants said that no message should be general and without any informative value. This is the reason that most of them rejected the message “Assurez-vous que l’air ambiant est sain” and why they appreciated the previous message “les enfants respirent...”

Overall, in all three French groups, most participants agreed with the principle of keeping the messages short.

*“Genre la pensée du jour.”*

## Reactions to printed sample

The full AQI communications piece as it might appear in a newspaper. See Appendix for samples of materials presented. (C7)

Participants were shown the complete communications item which incorporates the scale; a large numeral for the air quality reading; date, time and location of the reading; health risk messages for general public and those at risk; a forecast; website and telephone contact information; and an air and health fact.

Overall, there were extremely positive reactions in all groups to the printed sample of the proposed index. It was noticeable that the reactions were particularly positive in the sessions with the sensitized participants. They tended to come up with numerous elements or components of the index that they considered informative, important, and useful or in some way positive. They also indicated very few items as being puzzling, unnecessary, uninformative or in any way negative.

The major elements that were received favourably were:

- Separate messages for the at the risk and general populations
- The use of the region, date and time
- The large numeral
- The forecast (both text and symbols)
- A phone number to call if one was not sure if at risk
- The cause of the pollution when the rating is higher
- The website for more information
- The fact that it can be looked at on many different levels from a quick glance to reading it all

The limited negative comments on the printed sample, and which tended to be predominantly from the not sensitized group, were:

- The icon of the house, which was considered unnecessary in addition to the text (although there were mixed opinions, as others liked the icon)

- Telling people to stay indoors, which is seen by some as causing unnecessary alarm
- The use of the term “at risk” (as mentioned earlier there was a preference for incorporating “health risk”)
- The use of technical language that many did not understand, such as “particulate” and “long range atmospheric transportation”

Despite these few criticisms, overall the design for the proposed index was extremely well-received by participants everywhere.

*“Better than now where they say air quality is poor – what does that mean?”*

*“All positive, no negatives. Specific area, date time, place. Scale gives quick view. The large number, the note beside it indicates the source of the pollution. Who to contact and if you want more information tells you where to get it. Succinct, to the point, quick reference, all positive.”*

## Index names

At the first session, participants were handed a list of eight suggested or possible names for the air quality index and asked for their feedback. They were then asked to brainstorm in pairs to generate other alternative names. In all subsequent sessions, this order was reversed with the participants being asked to come up with their own suggestions.

The names that came out of the brainstorming (unprompted) were as follows:

- Air Index
- Air Health Rating/Report/Reading/Risk/Watch
- Pollution Index/Forecast/Alert/Report/Watch/Meter/Control
- Air Quality Index/Indicator/Rating/Meter/Measurement/Scale/Gauge/Guide/Advisory/Forecast/Chart/Probability Index

- Air Chart/Care/Portal
- Air Health Report
- Air Pollution Guide/Index
- Environmental Forecast/Warning
- Your Air Today
- Local Air Quality Index
- Air Quality Health Risk
- Community Pollution Measure/Warning/Monitor
- Daily Air Quality Index
- Smog Alert

The term “air quality” was most frequently used, and one or more pairs in each group suggested “air quality index.” This was put forward by participants in groups held in cities where that term is currently used, but also in other cities where it is not currently in use. Several participants in various sessions suggested that “air quality index” should be retained as many are familiar with this term.

There were very mixed opinions around the notion of including the concept of health in the name of the index. In several instances, participants felt that the index is strictly about the air quality and that health impacts are secondary, and therefore the word “health” does not belong in the title. Others felt quite strongly that health is indeed an important component of this index. Again, as one might expect, it was the not sensitized who suggested that health was secondary.

When the word “pollution” was discussed, it was generally rejected by participants as being too negative, and also as it was not considered to be appropriate when the reading is at the low end of the scale.

There was a preference in many sessions for the name of the index to be short. Several participants expressed the view that radio stations will shorten it anyway and probably to an easy acronym such as AQI or AHI.

When a list of possible names for the index was given to participants, again, the preferences were for names that were shorter such as “Air Health Index,” or for the term “Air Quality Index” because of people’s familiarity with it. Most of the names on the list were not generally considered appealing as they were felt to be too long and not easy to say.

In the French groups, there was almost a consensus that the name of the index should be “Indice de qualité de l’air” (English equivalent “Air Quality Index”) and the use of the word “santé” was solidly rejected.

### Most interesting things learned

To end each session, participants were asked to say what they felt was the most interesting thing that they had learned during the focus group.

Most of their responses fell into four areas. First, in most groups, several respondents would comment favourably on the very fact that the government is developing an index that would be standard across the country and will be providing the information to the public.

*“The overall fact that Environment Canada and others are developing a system for our knowledge – it’s great.”*

Second, a theme that was consistent across the country was the sense of surprise, even shock, that air quality has deteriorated to the extent that such an index is even necessary.

*“Very informative that we are at risk to the point where we need to rate the risk on a scale. That’s an eye-opener.”*

Third, the air and health facts were the one component of the overall index that was most often identified in the wrap-up discussion. The fact referring to children inhaling more pollution was mentioned several times as an interesting and important fact that they had heard for the first time in these sessions.

The fourth category of response reflects the fact that overall reactions to the materials shown to them, and in particular, the complete printed sample of the index,

were very positive. Despite different levels of enthusiasm, acceptance, and likelihood of taking action by sensitized and not sensitized participants, the tool was very favourably received across the country.

*“Everything! Good to have and good to know.”*

*“I’m very impressed. It must be the result of a lot of research – it comes across so concisely and informatively.”*

*“I can’t wait to see this in the newspaper – this is crucial, important, we need to have this. I’d like to know.”*

APPENDIX A:  
POST-AIR QUALITY EVENT SURVEYS – QUESTIONNAIRES

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**Health Canada/MSC  
2004 AQI Post-event Survey**

**Final (4) Questionnaire**

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**Introduction**

Good morning/afternoon/evening. My name is \_\_\_\_\_ and I am calling from the Environics Research Group, a public opinion research company. Today we are conducting a study to find out what people think about some important issues facing Canada. Please be assured that we are not selling or soliciting anything.

[IF ASKED: The survey will take about 10 minutes to complete]

[IF ASKED: I can tell you at the end who sponsored this survey]

We choose telephone numbers at random and then select one person from each household to be interviewed. To do this, we would like to speak to the person in your household, 18 years of age or older, who has had the most recent birthday. Would that be you?

IF PERSON SELECTED IS NOT AVAILABLE, ARRANGE FOR CALL-BACK

IF PERSON SELECTED IS NOT AVAILABLE OVER INTERVIEW PERIOD, ASK FOR PERSON WITH NEXT MOST RECENT BIRTHDAY

---

*I'd like to start out with a couple of general questions about your community. . .*

1. How would you rate the quality of the air in your community, that is, the presence or absence of pollution? Is it generally: [2] (1)

01 - Excellent  
02 - Good  
03 - Only fair  
04 - Poor  
VOLUNTEERED  
05 - Depends  
99 - DK/NA

2. And how would you rate the air quality in your community OVER THE PAST COUPLE OF DAYS? Has it been: [3 modified] (2)

01 - Excellent  
02 - Good  
03 - Only fair  
04 - Poor  
VOLUNTEERED  
05 - Depends  
99 - DK/NA

---

3. How much of a hazard do you believe air pollution presents to the health of people living in your area? Does it present: [5] (4)

- 01 - A very serious hazard
- 02 - A somewhat serious hazard
- 03 - Not a serious hazard, or
- 04 - No health hazard at all
- VOLUNTEERED
- 99 - DK/NA

4. Do you recall seeing or hearing any announcements or information about POOR AIR QUALITY in your area over the past couple of days? [10] (8)

- 01 - Yes
- 02 - No                               SKIP TO Q.17
- 99 - DK/NA                       SKIP TO Q.17

5. (IF YES TO Q.4) Can you tell me what it was that you recall hearing or seeing? [13-modified]  
DO NOT READ - CODE ALL THAT APPLY; PROBE IN DETAIL: Anything else? (6)

- 01 - Poor air quality in the area/Air quality advisory
- 02 - Air quality index/measure of air quality conditions
- 03 - Forecast for air quality over the next day or so
- 04 - Request to residents to limit personal exposure - PROBE FOR SPECIFICS
- 05 - Request to residents to reduce pollution causing behaviors/driving - PROBE FOR SPECIFICS
- 06 - Possible health problems caused by poor air quality
- 07 - Types of people most likely affected by poor air quality
- 08 - How people can reduce exposure/risks of poor air quality - PROBE FOR SPECIFICS
- 09 - How people can reduce contribution to poor air quality - PROBE FOR SPECIFICS
- 10 - Heat advisory/ high temperatures
- 11 - High UV index/caution about sun exposure
- 12 - Bad weather
- 13 - Smog alert
- 14 - People should not exert themselves
- 98 - Other (SPECIFY \_\_\_\_\_)
- 97 - Cannot recall
- 99 - DK/NA

6. Where do you recall seeing or hearing this announcement about poor air quality? [12 modified response categories] (9)

DO NOT READ - CODE ALL THAT APPLY; PROBE: Anywhere else?

- 01 - TV - PROBE FOR SPECIFIC STATION \_\_\_\_\_
- 02 - Radio
- 03 - Newspaper
- 04 - Internet/website - PROBE FOR SPECIFIC SITE \_\_\_\_\_
- 05 - Friend/family member
- 06 - Health Canada website
- 07 - Environment Canada website
- 08 - Weather Network (TV)
- 09 - Weather Network (website)
- 10 - Media billboard/outdoor electronic sign
- 11 - Phoning local weather office
- 12 - WEATHERADIO/WEATHERCOPY
- 13 - Environment Canada (SPECIFY MEDIUM \_\_\_\_\_)
- 99 - Other (SPECIFY \_\_\_\_\_)
- 99 - DK/NA

7. In which language do you recall seeing or hearing the air quality advisory? (10)

CODE ALL THAT APPLY

- 01 - English
- 02 - French
- VOLUNTEERED
- 99 - Cannot recall/NA

8. Do you recall the SPECIFIC LEVEL of air quality reported in the recent advisory you saw or heard? (11)  
CODE FORMAT PROVIDED - PROMPT IF NECESSARY: This might have been reported as a number, a word description, or a colour

a. Verbal scale \_\_\_\_\_

b. Numerical scale \_\_\_\_\_

c. Colour scale: \_\_\_\_\_

99 - Cannot recall/NA

9. Was this advisory something that you specifically looked for over the past couple of days, or did you just happen to see or hear it? (12)

- 01 - Specifically looked for it
- 02 - Just happened to see/hear it
- VOLUNTEERED
- 98 - Other (SPECIFY \_\_\_\_\_)
- 99 - DK/NA

10. Did you or someone else in your household experience any type of physical or health problems over the past couple of days that might be attributed to the current air quality? (14)

- 01 - Yes, self
- 02 - Yes, someone else in household
- 02 - No
- 03 - Uncertain
- 99 - DK/NA

11. Did you discuss this air quality advisory, or poor air quality, with anyone else that you know, such as friends, family members or co-workers? (16)

- 01 - Yes
- 02 - No
- 99 - DK/NA

12. Did you, or someone else in your household, DO anything differently as a result of this advisory? [16] (18)

- 01 - Yes, self
  - 02 - Yes, someone else in household
  - 03 - No
  - 99 - DK/NA
- SKIP TO Q.14  
SKIP TO Q.14





20. (IF YES TO Q.19) What did you or the other person do in response to the air quality advisories? [17] (29)  
DO NOT READ - CODE ALL THAT APPLY; PROBE: Anything else?

- 01 - Reduce use of car/avoid unnecessary trips
- 02 - Use alternate form of transportation
- 03 - Used car pool
- 04 - Avoid use of gas-powered equipment (lawnmower, chainsaw)
- 05 - Avoided use of oil-based paints/solvents
- 06 - Cut down on strenuous activity/aerobic exercise
- 07 - Reduced time spent outdoors
- 08 - Sought out more information on advisory/air quality
- 09 - Notify family member/others about advisory
- 98 - Other (SPECIFY \_\_\_\_\_)
- 99 - DK/NA

SKIP TO Q.22

21. Why did you personally NOT do anything differently after hearing an air quality advisory? [18] (30)  
DO NOT READ - CODE ALL THAT APPLY

- 01 - Unable to do anything - PROBE FOR SPECIFICS
- 02 - Could not reduce/avoid use of car
- 03 - No transportation alternative available
- 04 - Transportation alternatives inconvenient
- 05 - Because of schedule/obligations on particular day
- 06 - Do not drive/own car
- 07 - Do not have gas-powered equipment
- 08 - Nothing I can/could do
- 09 - Unclear/not sure what to do
- 10 - Too much trouble/inconvenient
- 11 - Wouldn't make any difference/one person has too little impact
- 12 - Not necessary to do anything/air quality not that bad
- 13 - Did not think about it
- 14 - Physical limitations
- 98 - Other (SPECIFY \_\_\_\_\_)
- 99 - DK/NA

**ASK EVERYONE**

22. Air pollution can cause health problems among both healthy people and those with heart or lung illnesses. What, if anything, do you believe people can do to limit their exposure to air pollution and its harmful health effects? [7 modified response categories] (31)  
DO NOT READ - CODE ALL THAT APPLY; PROBE: Anything else?

- 01 - Stay indoors
- 02 - Avoid strenuous exercise/physical exertion
- 03 - Avoid high traffic areas
- 04 - Avoid exposure at certain times of the day
- 05 - Limit activities only during an advisory
- 06 - None/No way to limit exposure
- 07 - Move to country/rural area
- 98 - Other (SPECIFY \_\_\_\_\_)
- 99 - DK/NA

23. Would you say you are very, somewhat, not very, or not at all familiar with something called the Air Quality Index for your area currently distributed through the media? [Environics 2001 Air Pollution Study/20-modified] (35)

- 01 - Very familiar
- 02 - Somewhat familiar
- 03 - Not very familiar
- 04 - Not at all familiar        SKIP TO Q.30
- VOLUNTEERED
- 99 - DK/NA                        SKIP TO Q.30

24. How frequently do you LOOK for information on the current Air Quality Index during the summer months? Would it be: (36)

- 01 - Regularly
- 02 - Occasionally
- 03 - Rarely
- 04 - Never                        SKIP TO Q.26
- VOLUNTEERED
- 05 - Only when there is an advisory
- 99 - DK/NA                        SKIP TO Q.26

25. And where are you most likely to look for Air Quality information? (37)  
DO NOT READ - CODE ALL THAT APPLY; PROBE: Anything else?

- 01 - TV - PROBE FOR SPECIFIC STATION \_\_\_\_\_
- 02 - Radio
- 03 - Newspaper
- 04 - Internet/website - PROBE FOR SPECIFIC SITE \_\_\_\_\_
- 05 - Health Canada website
- 06 - Environment Canada website
- 07 - Weather Network (TV)
- 08 - Weather Network (website)
- 09 - Friend/family member
- 10 - Media billboard/outdoor electronic sign
- 11 - Phoning local weather office
- 12 - WEATHERADIO/WEATHERCOPY
- 13 - Environment Canada (SPECIFY MEDIUM \_\_\_\_\_)
- 99 - Other (SPECIFY \_\_\_\_\_)
- 99 - DK/NA

26. The Air Quality Index is usually presented in three different formats. Which of these are you familiar with?  
READ AND ROTATE (38)

- a. The word scale, ranging from “good” to “bad/poor”
  - b. The numeric scale, ranging from “0” to “100+”
  - c. The colour scale, ranging from “green” to “red”
- 
- 01 - Yes
  - 02 - No
  - 99 - DK/NA

**IF NO TO Q26a, b, AND c, SKIP TO Q 30**

27. (IF MENTION MORE THAN ONE IN Q.26--OTHERS SKIP TO Q.28) And which of these formats do you personally find to be the most useful? (39)  
READ FORMATS MENTIONED IN Q.38 IN SAME SEQUENCE - IF NECESSARY

01 - Word scale

02 - Numeric scale

03 - Colour scale

VOLUNTEERED

04 - All equally useful           SKIP TO Q.30

05 - Depends                    SKIP TO Q.30

99 - DK/NA                      SKIP TO Q.30

28. Thinking about this [word/numeric/colour] scale, at which of the following levels do you think that air quality starts to affect people's health? (new)  
ASK FOR SAME SCALE AS PREVIOUS QUESTION  
READ CATEGORIES FOR SELECTED SCALE IF NECESSARY - CODE ONE RESPONSE ONLY

a. Word scale

01 - Good

02 - Acceptable

03 - Bad/poor

VOLUNTEERED

98 - Other (SPECIFY \_\_\_\_\_)

99 - DK/NA

b. Numeric scale

01 - 0 - 25

02 - 26 - 50

03 - 51+

VOLUNTEERED

98 - Other (SPECIFY \_\_\_\_\_)

99 - DK/NA

c. Colour scale

01 - Green

02 - Yellow

03 - Red

VOLUNTEERED

98 - Other (SPECIFY \_\_\_\_\_)

99 - DK/NA





32. And would you say it is very, somewhat, not very or not at all important for you or others in your household to receive each of the following types of air pollution advisory information? [21modified] (45)

READ AND ROTATE

- a. The Air Quality Index or level of pollution for that day
- b. The forecast of how long the poor air quality episode is supposed to last
- c. How to limit your exposure to air pollution
- d. What you can do to reduce your own contribution to local air pollution

01 - Very important

02 - Somewhat important

03 - Not very important

04 - Not at all important

VOLUNTEERED

05 - Depends

99 - DK/NA

*Finally, I'd like to ask you a few questions about yourself that will help us analyze the results of this survey. . .*

33. Thinking about your own general activities on weekdays during the summer months, how many hours would you be likely to spend out of doors on a typical day? Would it be: [29] (46)

READ

01 - Less than one hour

02 - 1 to 3 hours

03 - 3 to 6 hours

04 - More than 6 hours

VOLUNTEERED

05 - Depends (PROBE FOR TYPICAL DAY)

99 - DK/NA

34. Compared to other people your age, would you say your health is generally: [31] (47)

READ

01 - Excellent

02 - Very good

03 - Good

04 - Only fair

05 - Poor

VOLUNTEERED

99 - REFUSE/NA

35. Has a doctor ever told you, or someone else in your household that you or they have any of the following health problems? [32-33 combined and modified] (48)

READ AND ROTATE

- a. Asthma
- b. Lung disease, including emphysema, chronic bronchitis, chronic obstructive pulmonary disease, pneumonia
- c. Heart disease
- d. Allergies, including seasonal allergies, hay fever or other environmental allergies
- e. Diabetes

01 - Yes, self  
02 - Yes, other in household  
02 - No  
99 - DK/NA

36. What is the highest level of education you have completed? [36] (49)

READ IF NECESSARY - CODE ONE ONLY

- 01 Elementary school
- 02 Some high school
- 03 Completed high school
- 04 Some community college/technical college/CEGEP
- 05 Completed community college/technical college/CEGEP
- 06 Some university
- 07 Completed university
- 08 Post-graduate degree
- 09 No schooling
- 97 No Response/Refused

37. In what year were you born? [34] (50)

\_\_\_\_\_ Year born  
9999 - REFUSE/NA

38. Does your household currently include: [35] (51)

READ

- a. Children under 16 years of age
- b. Adults 65 and over (other than yourself)

01 - Yes  
02 - No  
99 - DK/NA

39. What is your mother tongue, that is, the language you first learned at home? (52)  
CODE ONE ONLY

- 01 English
- 02 French
- 98 Other (SPECIFY \_\_\_\_\_)
- 99 No response/Refused

40. And finally, may I have the first three digits of your postal code? (53)  
RECORD

\_\_\_\_ \_

This completes the survey. In case my supervisor would like to verify that I conducted this interview, may I have your first name?

First Name: \_\_\_\_\_

This survey was conducted on behalf of the Government of Canada, and is registered under the Federal Access to Information Act. Thank you very much for your participation.

RECORD:

41. Gender

- 01 Male
- 02 Female

42. Language of interview

- 01 English
- 02 French

APPENDIX B:  
AUTUMN 2004 NATIONAL SURVEY – QUESTIONNAIRE

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**Health Canada/MSC  
2004 AQI Post-season Survey**

**FINAL Questionnaire**

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**Introduction**

Good morning/afternoon/evening. My name is \_\_\_\_\_ and I am calling from the Environics Research Group, a public opinion research company. Today we are conducting a study to find out what people think about some important issues facing Canada. Please be assured that we are not selling or soliciting anything. This survey is registered with the national survey registration system.

[IF ASKED: The survey should take no more than 20 minutes to complete]

[IF ASKED: I can tell you at the end who sponsored this survey]

[IF ASKED: The registration system has been created by the Canadian survey research industry to allow the public to verify that a survey is legitimate, get information about the survey industry or register a complaint. The registration system 's toll-free telephone number is 1-800-554-9996].

We choose telephone numbers at random and then select one person from each household to be interviewed. To do this, we would like to speak to the person in your household, 18 years of age or older, who has had the most recent birthday. Would that be you?

IF PERSON SELECTED IS NOT AVAILABLE, ARRANGE FOR CALL-BACK

IF PERSON SELECTED IS NOT AVAILABLE OVER INTERVIEW PERIOD, ASK FOR PERSON WITH NEXT MOST RECENT BIRTHDAY

---

*I'd like to start out with a couple of general questions about environmental issues. . .*

[2001/4]

1. Are you very, somewhat, not very or not at all concerned about each of the following:  
READ AND RANDOMIZE BUT ALWAYS READ ITEM F LAST

- a. The manufacture, use and disposal of toxic chemicals
- b. The quality of the air
- c. The quality of the water
- d. The depletion of the ozone layer
- e. The use of biotechnology in agriculture and food production
- f. Climate change

01 - Very concerned

02 - Somewhat concerned

03 - Not very concerned

04 - Not at all concerned

VOLUNTEERED

99 - DK/NA

[2004/1]

2. How would you rate the quality of the air in your community?

- 01 - Excellent
- 02 - Good
- 03 - Only fair
- 04 - Poor
- VOLUNTEERED
- 05 - Depends
- 99 - DK/NA

NEW

3. And how would you rate the quality of the air in your community in each of the four seasons, starting with:

READ AND ROTATE IN SEQUENCE WITH RANDOM START POINT

- a. Winter
- b. Spring
- c. Summer
- d. Fall

- 01 - Excellent
- 02 - Good
- 03 - Only fair
- 04 - Poor
- VOLUNTEERED
- 05 - Depends
- 99 - DK/NA

[2001/15 - replaced "pollution" with "quality"]

4. Would you say that the air quality in your community has improved, stayed the same or become worse in the last five years?

- 01 - Improved
- 02 - Stayed the same
- 03 - Become worse
- VOLUNTEERED
- 99 - DK/NA



RANDOMLY SPLIT THE SAMPLE AND ASK EACH ABOUT EITHER "AIR QUALITY" OR "SMOG" IN Q.5

NEW

5. When you hear the term [air quality/smog] what do you think this usually refers to?  
DO NOT READ - CODE FIRST, SECOND AND OTHER MENTIONS; PROBE: Anything else?

- 01 - Pollution (PROBE ONCE FOR SPECIFICS)
- 02 - Exhaust
- 03 - Smog
- 04 - Indoor air quality
- 05 - Dust/dirt
- 06 - Pollen
- 07 - Humidity
- 08 - Outdoor air quality
- 09 - Industry
- 10 - Moulds
- 11 - Household products
- 12 - Grass/trees
- 13 - Ozone
- 14 - Depletion of the ozone layer
- 15 - Carbon monoxide
- 16 - Second-hand smoke
- 17 - Vehicle exhaust/emissions
- 18 - Particulates
- 19 - Amount of pollutants
- 98 - Other (SPECIFY \_\_\_\_\_)
- 99 - DK/NA

NEW

6. How would you know when the air quality in your area is poor?  
DO NOT READ - CODE FIRST AND OTHER MENTIONS; PROBE: Anything else?

- 01 - Weather forecast/reports (media)
- 02 - Air quality index
- 03 - Air quality advisories/Smog advisories
- 04 - Can see it/Air looks dirty/brown
- 05 - Can taste it
- 06 - Can smell it
- 07 - Can feel it/health is affected (PROBE FOR SPECIFICS)
- 08 - Affects lungs/breathing/short of breath
- 09 - Aggravates allergies/asthma
- 98 - Other (SPECIFY \_\_\_\_\_)
- 97 - Cannot tell when air is poor                      SKIP TO Q.8
- 99 - DK/NA    SKIP TO Q.8

NEW

7. Without the benefit of a local weather forecast, would you be able to tell on your own that the air quality is poor as soon as you step out of doors?

- 01 - Yes
- 02 - No
- VOLUNTEERED
- 03 - Depends
- 04 - Never have poor air quality
- 99 - DK/NA

[2001/27]

8. As far as you know, what are the major sources of air pollution in your area?  
DO NOT READ - CODE FIRST AND OTHER MENTIONS; PROBE: Any others?

- 01 - Agricultural sources/stubble burning/livestock/methane from cattle
- 02 - Emissions from power generating plants
- 03 - Industry/factory emissions
- 04 - Loss of ozone layer
- 05 - Natural events (forest fires, volcanic eruptions)
- 06 - Ozone/ground level ozone
- 07 - Paints/aerosols/spray cans
- 08 - Pollution from the U.S/distant regions
- 09 - Road dust
- 10 - Small engine emissions (lawnmowers, snowmobiles)
- 11 - Vehicle emissions (cars, trucks, SUVs)
- 12 - Weather
- 13 - Wood stoves/wood fires
- 14 - Forest fires
- 97 - None/no sources of pollution SKIP TO Q.10
- 98 - Other (SPECIFY \_\_\_\_\_)
- 99 - DK/NA SKIP TO Q.10

NEW

9. Would you say the air pollution in your area comes mostly from sources:  
READ AND ROTATE

- 01 - In or near your community
- 02 - From distant regions
- VOLUNTEERED
- 03 - Both types of sources equally
- 04 - Depends
- 99 - DK/NA

*Now I'd like to ask you a few more general questions about air quality and pollution, based on what you know or have heard . . .*

NEW

10. Please tell me whether each of the following types of weather conditions has a lot of influence, some influence, or little influence in determining whether the air quality is good or bad? Starting with . . .  
READ AND ROTATE

- a. Humidity
- b. Temperature
- c. Cloud cover

- 01 - A lot of influence
- 02 - Some influence
- 03 - Little influence
- VOLUNTEERED
- 04 - Depends
- 05 - Has no effect on air quality
- 99 - DK/NA



[2001/6]

16. What specific effects on human health do you think are most likely to occur as a result of air pollution?  
DO NOT READ - CODE FIRST, SECOND AND OTHER MENTIONS; PROBE: Anything else?

- 01 - Allergies
- 02 - Asthma
- 03 - Bronchitis
- 04 - Cancer
- 05 - Death/shorter life span
- 06 - Fatigue/loss of concentration
- 07 - General health problems (non-specific)
- 08 - Heart disease
- 09 - High blood pressure
- 10 - Multiple Sclerosis/Fibromyalgia
- 11 - Other respiratory/lung problems
- 12 - Skin rashes/irritation
- 13 - Immune suppression/
- 14 - Headaches
- 15 - Nausea
- 16 - Discomfort
- 17 - Breathing problems
- 97 - No health effects
- 98 - Other (SPECIFY \_\_\_\_\_)
- 99 - DK/NA

NEW

17. Do you think the health effects of air pollution tend to be more immediate ones that people notice right away, or more longer term problems that won't be evident for some time?  
DO NOT PROBE IF "BOTH EQUALLY" IS VOLUNTEERED INITIAL RESPONSE

- 01 - More immediate            SKIP TO Q.19
- 02 - More long term  
VOLUNTEERED
- 03 - Both equally            SKIP TO Q.19
- 99 - DK/NA

NEW

18. (IF ONLY LONG TERM OR DK IN Q.17) Do you think there are ANY immediate health effects that people in Canada might experience as a result of air pollution?

- 01 - Yes
- 02 - No
- 99 - DK/NA

NEW

19. What about the impact that air pollution can have on different types of health problems? Do you think air pollution does, or does not contribute to each of the following:

READ AND RANDOMIZE

PROBE: Would you say air pollution definitely [not] or likely [not] contributes to this problem?

- a. Asthma
- b. Heart disease
- c. Cancer
- d. Diabetes
- e. Respiratory illnesses, such as bronchitis
- f. Skin rashes

01 - Definitely contributes

02 - Likely contributes

03 - Likely does not contribute

04 - Definitely does not contribute

VOLUNTEERED

05 - Depends (e.g. on type of individual)

99 - DK/NA

NEW

20. What types of people do you believe are most likely to experience health effects from air pollution?

DO NOT READ - CODE FIRST AND OTHER MENTIONS; PROBE: Anyone else?

01 - People with preexisting health problems

02 - Elderly/seniors

03 - Children/infants/young people

04 - Women during pregnancy

05 - People working/exercising outdoors

06 - People working/exercising indoors

07 - People with heart disease/conditions

08 - People with lung disease/conditions

09 - People with asthma

10 - Smokers

11 - Recent immigrants

12 - Migraine sufferers

13 - Drug users

14 - People in hospitals (due to indoor air quality)

15 - People with low/weak immune systems

98 - Other (SPECIFY \_\_\_\_\_)

97 - None

99 - DK/NA

NEW

21. Do you think that air pollution affects people's health at any level; that is even when there are only very low levels of pollutants in the air? Or do you think the impact on health is only when air pollution reaches a certain level?

01 - Even at low levels

02 - Only when it reaches a certain level

VOLUNTEERED

03 - Depends (e.g. on type of person)

99 - DK/NA

[2001/7]

22. Regarding its effect on health, do you think indoor air pollution is less harmful, more harmful, or has the same effect as outdoor air pollution?

- 01 - Less harmful
- 02 - More harmful
- 03 - Same effect
- VOLUNTEERED
- 99 - DK/NA

[2004/3]

23. How much of a hazard do you believe air pollution presents to the health of people living in your area?  
Does it present:

- 01 - A very serious hazard
- 02 - A somewhat serious hazard
- 03 - Not a serious hazard, or
- 04 - No health hazard at all
- VOLUNTEERED
- 99 - DK/NA

[2004/18]

24. Have you or someone else in your household experienced any type of physical or health problems over the past two years that might be attributed to air pollution at the time?

- 01 - Yes, self
  - 02 - Yes, someone else in household
  - 02 - No
  - 03 - Uncertain
  - 99 - DK/NA
- SKIP TO Q.30  
SKIP TO Q.30  
SKIP TO Q.30

NEW

25. (IF YES TO Q.24) What type of health problem[s] did [you/this other household member] experience?  
DO NOT READ - CODE FIRST AND OTHER MENTIONS

- 01 - Allergies
  - 02 - Asthma
  - 03 - Bronchitis
  - 04 - Cancer
  - 05 - Death/shorter life span
  - 06 - Fatigue/loss of concentration
  - 07 - General health problems (non-specific)
  - 08 - Heart disease
  - 09 - High blood pressure
  - 10 - Multiple Sclerosis/Fibromyalgia
  - 11 - Other respiratory/lung problems
  - 12 - Skin rashes/irritation
  - 97 - No health effects
  - 98 - Other (SPECIFY \_\_\_\_\_)
  - 99 - DK/NA
- SKIP TO Q.30



**ASK EVERYONE**

[2004/22]

30. Research has shown that air pollution can cause health problems among both healthy people and those with heart or lung illnesses. What, if anything, do you believe people can do to limit their exposure to air pollution and its harmful health effects?

DO NOT READ - CODE FIRST AND OTHER MENTIONS; PROBE: Anything else?

- 01 - Stay indoors
- 02 - Avoid strenuous exercise/physical exertion
- 03 - Avoid high traffic areas
- 04 - Avoid exposure at certain times of the day
- 05 - Limit activities only during an advisory
- 06 - Move to country/rural area
- 07 - Wear a mask
- 08 - Take medication/oxygen
- 09 - Protect self from the sun
- 10 - Avoid second-hand smoke
- 11 - Get out of the city/away from polluted area/Avoid high pollution areas
- 12 - None/No way to limit exposure
- 13 - No reason to limit exposure/air pollution not a problem
- 98 - Other (SPECIFY \_\_\_\_\_)
- 99 - DK/NA

NEW

32. How effective do you believe each of the following measures is likely to be in limiting exposure to air pollution and its health effects?

READ AND RANDOMIZE

- a. Staying indoors
- b. Avoiding any strenuous exercise or activity
- c. Avoiding high traffic areas
- d. Spending time in the country, away from urban areas

- 01 - Very effective
- 02 - Somewhat effective
- 03 - Not very effective
- 04 - Not at all effective
- VOLUNTEERED
- 05 - Depends
- 99 - DK/NA

NEW

33. If a local air quality advisory reported an unhealthy level of ozone in the air, do you think protecting yourself from the sun is the best thing you can do?

- 01 - Yes
- 02 - No
- VOLUNTEERED
- 03 - Depends
- 99 - DK/NA



[2004/17] - modified to ask about this year and also previous years

34. Do you recall seeing or hearing any announcements or information about air quality in your area:

READ IN SEQUENCE

- a. During this year (2004)
- b. In the previous two years (2002-03)

- 01 - Yes
- 02 - No
- 99 - DK/NA

[2001/20; 2004/23]

35. Would you say you are very, somewhat, not very, or not at all familiar with something called the Air Quality Index for your area currently distributed through the media?

- 01 - Very familiar
- 02 - Somewhat familiar
- 03 - Not very familiar
- 04 - Not at all familiar      SKIP TO Q.42
- VOLUNTEERED
- 99 - DK/NA      SKIP TO Q.42

[2001/21]

36. (IF FAMILIAR IN Q.35) How often do you personally use the [air quality index]? Is it:

- 01 - Frequently
- 02 - Occasionally, or
- 03 - Never      SKIP TO Q.38
- VOLUNTEERED
- 99 - DK/NA

[2004/25]

37. And where are you most likely to look for air quality information?  
DO NOT READ - CODE FIRST AND OTHER MENTIONS; PROBE: Anything else?

- 01 - TV - PROBE FOR SPECIFIC STATION \_\_\_\_\_
- 02 - Radio
- 03 - Newspaper
- 04 - Internet/website - PROBE FOR SPECIFIC SITE \_\_\_\_\_
- 05 - Health Canada website
- 06 - Environment Canada website
- 07 - Weather Network (TV)
- 08 - Weather Network (website)
- 09 - Friend/family member
- 10 - Media billboard/outdoor electronic sign
- 11 - Phoning local weather office
- 12 - WEATHERADIO/WEATHERCOPY
- 13 - Environment Canada (SPECIFY MEDIUM \_\_\_\_\_)
- 99 - Other (SPECIFY \_\_\_\_\_)
- 99 - DK/NA

[2004/26] - customize for each region

38. The Air Quality Index is usually presented in three different formats. Which of these are you familiar with?  
READ AND RANDOMIZE

- a. The word scale, ranging from [QUE: "good" to "bad/poor"] [ONT: "very good" to "very poor"]  
[ATL/PRA/BC: "good" to "very poor"]
- b. The numeric scale, ranging from "0" to "100+"
- c. The colour scale, ranging from [QUE: "green" to "red"] [ONT/PRA: "blue" to "red"] [ATL/BC "green" to "red"]

01 - Yes

02 - No

99 - DK/NA

[2004/27]

39. (ASK IF MENTION MORE THAN ONE IN Q.38--OTHERS SKIP TO Q.40) And which of these formats do you personally find to be the most useful?

READ FORMATS MENTIONED IN Q.38 IN SAME SEQUENCE - IF NECESSARY

01 - Word scale

02 - Numeric scale

03 - Colour scale

VOLUNTEERED

04 - All equally useful

05 - Depends

99 - DK/NA

[2004/28] - customize by region

40. Thinking about this [word/numeric/colour] scale, at which of the following levels do you think that air quality starts to affect people's health?

ASK FOR SAME SCALE AS MENTIONED IN Q.38 or 39

IF ONE SCALE NOT SELECTED IN Q.38 or 39, RANDOMLY ASSIGN ONE

READ CATEGORIES FOR SELECTED SCALE - CODE ONE RESPONSE ONLY

<b>QUEBEC</b>	<b>ONTARIO</b>	<b>ATLANTIC/BC</b>	<b>PRAIRIES</b>
<u>a. Word scale</u>	<u>a. Word scale</u>	<u>a. Word scale</u>	<u>a. Word scale</u>
01 - Good	01 - Very good	01 - Good	01 - Good
02 - Fair	02 - Good	02 - Fair	02 - Fair
03 - Bad/poor	03 - Moderate	03 - Poor	03 - Poor
VOLUNTEERED	04 - Poor	04 - Very poor	04 - Very poor
97 - At any level	05 - Very poor	VOLUNTEERED	VOLUNTEERED
98 - Other (SPECIFY)	VOLUNTEERED	97 - At any level	97 - At any level
99 - DK/NA	97 - At any level	98 - Other (SPECIFY)	98 - Other (SPECIFY)
	98 - Other (SPECIFY)	99 - DK/NA	99 - DK/NA
	99 - DK/NA		
<u>b. Numeric scale</u>	<u>b. Numeric scale</u>	<u>b. Numeric scale</u>	<u>b. Numeric scale</u>
01 - 0 - 25	01 - 0 - 15	01 - 0 - 25	01 - 0 - 25
02 - 26 - 50	02 - 16 - 31	02 - 26 - 50	02 - 26 - 50
03 - 51+	03 - 32 - 50	03 - 51 - 100	03 - 51 - 100
VOLUNTEERED	04 - 51 - 100	04 - 100+	04 - 100+
04 - At any level	05 - 100+	VOLUNTEERED	VOLUNTEERED
98 - Other (SPECIFY)	VOLUNTEERED	97 - At any level	97 - At any level
99 - DK/NA	97 - At any level	98 - Other (SPECIFY)	98 - Other (SPECIFY)
	98 - Other (SPECIFY)	99 - DK/NA	99 - DK/NA
	99 - DK/NA		
<u>c. Colour scale</u>	<u>c. Colour scale</u>	<u>c. Colour scale</u>	<u>c. Colour scale</u>
01 - Green	01 - Blue	01 - Green	01 - Blue
02 - Yellow	02 - Green	02 - Yellow	02 - Green
03 - Red	03 - Yellow	03 - Orange	03 - Yellow
VOLUNTEERED	04 - Orange	04 - Red	04 - Red
97 - At any level	05 - Red	VOLUNTEERED	VOLUNTEERED
98 - Other (SPECIFY)	VOLUNTEERED	97 - At any level	97 - At any level
99 - DK/NA	97 - At any level	98 - Other (SPECIFY)	98 - Other (SPECIFY)
	98 - Other (SPECIFY)	99 - DK/NA	99 - DK/NA
	99 - DK/NA		

[2004/29] - customize by region

41. And at what level of the Index do you consider the air quality to be bad enough to think about changing your routine?

READ CATEGORIES FOR SAME SCALE AS IN Q.40 IN SAME ORDER - CODE ONE RESPONSE ONLY

**QUEBEC**

a. Word scale

- 01 - Good
- 02 - Fair
- 03 - Bad/poor
- VOLUNTEERED
- 97 - At any level
- 98 - Other (SPECIFY)
- 99 - DK/NA

b. Numeric scale

- 01 - 0 - 25
- 02 - 26 - 50
- 03 - 51+
- VOLUNTEERED
- 04 - At any level
- 98 - Other (SPECIFY)
- 99 - DK/NA

c. Colour scale

- 01 - Green
- 02 - Yellow
- 03 - Red
- VOLUNTEERED
- 97 - At any level
- 98 - Other (SPECIFY)
- 99 - DK/NA

**ONTARIO**

a. Word scale

- 01 - Very good
- 02 - Good
- 03 - Moderate
- 04 - Poor
- 05 - Very poor
- VOLUNTEERED
- 97 - At any level
- 98 - Other (SPECIFY)
- 99 - DK/NA

b. Numeric scale

- 01 - 0 - 15
- 02 - 16 - 31
- 03 - 32 - 50
- 04 - 51 - 100
- 05 - 100+
- VOLUNTEERED
- 97 - At any level
- 98 - Other (SPECIFY)
- 99 - DK/NA

c. Colour scale

- 01 - Blue
- 02 - Green
- 03 - Yellow
- 04 - Orange
- 05 - Red
- VOLUNTEERED
- 97 - At any level
- 98 - Other (SPECIFY)
- 99 - DK/NA

**ATLANTIC/BC**

a. Word scale

- 01 - Good
- 02 - Fair
- 03 - Poor
- 04 - Very poor
- VOLUNTEERED
- 97 - At any level
- 98 - Other (SPECIFY)
- 99 - DK/NA

b. Numeric scale

- 01 - 0 - 25
- 02 - 26 - 50
- 03 - 51 - 100
- 04 - 100+
- VOLUNTEERED
- 97 - At any level
- 98 - Other (SPECIFY)
- 99 - DK/NA

c. Colour scale

- 01 - Green
- 02 - Yellow
- 03 - Orange
- 04 - Red
- VOLUNTEERED
- 97 - At any level
- 98 - Other (SPECIFY)
- 99 - DK/NA

**PRAIRIES**

a. Word scale

- 01 - Good
- 02 - Fair
- 03 - Poor
- 04 - Very poor
- VOLUNTEERED
- 97 - At any level
- 98 - Other (SPECIFY)
- 99 - DK/NA

b. Numeric scale

- 01 - 0 - 25
- 02 - 26 - 50
- 03 - 51 - 100
- 04 - 100+
- VOLUNTEERED
- 97 - At any level
- 98 - Other (SPECIFY)
- 99 - DK/NA

c. Colour scale

- 01 - Blue
- 02 - Green
- 03 - Yellow
- 04 - Red
- VOLUNTEERED
- 97 - At any level
- 98 - Other (SPECIFY)
- 99 -DK/NA

[2001/35a-g] - item a is new

42 Please tell me if the following information about air quality would be very, somewhat, not very, or not at all useful for you to know?

READ AND RANDOMIZE

- a. The potential health effects of the pollution level for the day
- b. What individuals can do to limit their exposure to air pollution
- c. The types of pollutants causing poor air quality
- d. A forecast for how long an air pollution episode is expected to last
- e. The air quality index or level of pollution for the day

01 - Very useful  
02 - Somewhat useful  
03 - Not very useful  
04 - Not at all useful  
VOLUNTEERED  
99 - DK/NA

NEW

43. (ASK IF MORE THAN ONE IS VERY USEFUL IN Q.42 - OTHERS GO TO Q.44) You indicated that several of these types of information would be very useful. Which one of them would you most want to know?  
READ ITEMS RATED AS VERY IMPORTANT IN Q.42 IN SAME SEQUENCE - CODE ONE ONLY

01 - The potential health effects of the pollution level for the day  
02 - What individuals can do to limit personal exposure to air pollution  
03 - The types of pollutants causing poor air quality  
04 - A forecast for how long an air pollution episode is expected to last  
05 - The air quality index or level of pollution for the day  
VOLUNTEERED  
06 - All are equally important  
97 - Depends  
99 - DK/NA

[2001/34]

44. Do you think that air pollution information should be provided to Canadians?  
READ AND ROTATE

01 - All the time  
or  
02 - Only when there is an air quality problem  
VOLUNTEERED  
99 - DK/NA

Finally, I'd like to ask you a few questions about yourself that will help us analyze the results of this survey. . .

[2004/34]

45. Compared to other people your age, would you say your health is generally:

READ

01 - Excellent

02 - Very good

03 - Good

04 - Only fair

05 - Poor

VOLUNTEERED

99 - REFUSE/NA

[2001/9]

46. Has a doctor ever told you that you had a respiratory illness?

01 - Yes

02 - No

SKIP TO Q.49

VOLUNTEERED

04 - Self-diagnosed

99 - DK/NA

SKIP TO Q.49

[2001/10]

47. (IF YES OR SELF-DIAGNOSED IN Q.46) What respiratory illness(es) were you diagnosed with?

DO NOT READ - CODE ALL THAT APPLY

01 - Allergies

02 - Asthma

03 - Bronchitis

04 - Emphysema

05 - Pneumonia

06 - Respiratory/lung problems (non-specific)

98 - Other (SPECIFY \_\_\_\_\_)

99 - DK/NA

NEW

48. To what extent [does this condition/do these conditions] currently impair your everyday living? Does it affect you:

01 - A great deal

02 - Somewhat

03 - Not very much

04 - Not at all

VOLUNTEERED

99 - DK/NA

[2004/36]

49. What is the highest level of education you have completed?  
READ IF NECESSARY - CODE ONE ONLY

- 01 Elementary school
- 02 Some high school
- 03 Completed high school
- 04 Some community college/technical college/CEGEP
- 05 Completed community college/technical college/CEGEP
- 06 Some university
- 07 Completed university
- 08 Post-graduate degree
- 09 No schooling
- 97 No Response/Refused

[2004/37]

50. In what year were you born?

\_\_\_\_\_ Year born  
9999 - REFUSE/NA

[2004/38]

51. Does your household currently include:  
READ

- a. Children under 16 years of age
- b. Adults 65 and over (other than yourself)

- 01 - Yes
- 02 - No
- 99 - DK/NA

[2004/39]

52. What is your mother tongue, that is, the language you first learned at home?  
CODE ONE ONLY

- 01 English
- 02 French
- 98 Other (SPECIFY \_\_\_\_\_)
- 99 No response/Refused

[2004/40]

53. And finally, may I have the first three digits of your postal code?  
RECORD

\_\_\_\_ \_

This completes the survey. In case my supervisor would like to verify that I conducted this interview, may I have your first name?

First Name: \_\_\_\_\_

This survey was conducted on behalf of the Government of Canada, and is registered under the Federal Access to Information Act. Thank you very much for your participation.

RECORD:

54. Gender

- 01 Male
- 02 Female

56. Language of interview

- 01 English
- 02 French

57. Province

- 01 - Alberta
- 02 - British Columbia
- 03 - Manitoba
- 04 - Newfoundland
- 05 - New Brunswick
- 06 - Nova Scotia
- 07 - Ontario
- 08 - Prince Edward island
- 09 - Quebec
- 10 - Saskatchewan

58. Community size

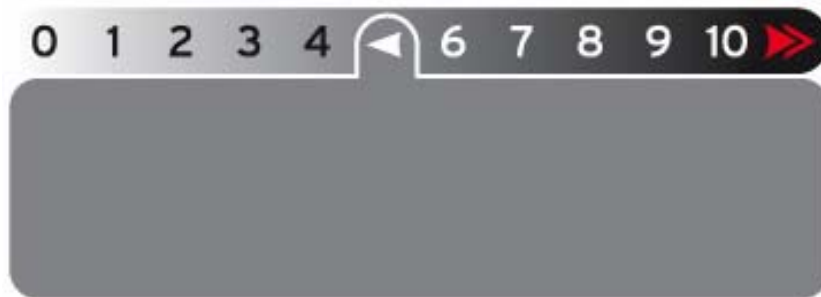
- 01 - 1 million plus
- 02 - 100,000 to 1 million
- 03 - 25,000 to 100,000
- 04 - 10,000 to 25,000
- 05 - 5,000 to 10,000
- 06 - Less than 5,000



APPENDIX C:  
QUALITATIVE ASSESSMENT – TEST MATERIALS



# C1 - Greyscale Bar with Numbers



## C2 - Colour Bar with Numbers



## C3 - Colour Bar with Numbers, Health Risk Descriptor and Forecast

**2** Low pollution levels continuing through next 48 hours

- > Ideal for outdoor activities, biking or walking to work and sports.
- > People with lung or heart disease should always observe symptoms, even at low pollution levels and follow a doctor's advice for exercise.

**2** Niveau de pollution bas pendant les prochaines 48 heures

- > Idéal pour les activités en plein air, le vélo, la marche, et faire du sport.
- > Les personnes ayant des maladies respiratoires ou cardiaques, devraient toujours surveiller l'apparition de symptômes, même si le niveau de pollution est bas.
- > Suivez l'avis de votre médecin avant d'entreprendre tout exercice.

**5** < Moderate pollution reading will likely decrease over next 8 hrs

- > People with heart or lung disease (including asthma) must observe pollution readings to plan physical and outdoor activities.
- > Follow your doctor's advice about managing your condition.

**5** Niveau de pollution modéré devant diminuer au cours des 8 prochaines heures

- > Les personnes ayant des maladies respiratoires ou cardiaques (asthme inclus) doivent surveiller le niveau de pollution avant d'entreprendre des activités physiques ou de plein air.
- > Suivez l'avis de votre médecin.

**12** Extreme health risk alert in effect for next 12 hrs >

- > Observe symptoms such as breathing problems
- > Elderly, children and people with illnesses should avoid exertion
- > Plan activities carefully

**12** Alerte extrême. Risques très élevés pour la santé durant les 12 heures à venir.

- > Surveiller l'apparition de symptômes tels que les problèmes respiratoires.
- > Les personnes âgées, les enfants et les personnes malades devraient éviter tout effort.
- > Planifier consciencieusement vos activités.

## C4 - Category Labels

DEFAULT:

<b>Reading</b>	<b>Suggested Term</b>
0-3	Low health risk
4-6	Moderate health risk
7-10	Increased health risk
>10	High health risk

<b>Reading</b>	<b>Suggested Term</b>
0-3	Minimal health risk
4-6	Moderate health risk
7-10	High health risk
>10	Very high health risk

ALTERNATIVE 1:

<b>Reading</b>	<b>Suggested Term</b>
0-3	No precautions
4-6	Precaution level for sensitive people
7-10	Caution level
>10	Hazard level

ALTERNATIVE 2:

<b>Reading</b>	<b>Suggested Term</b>
0-3	Reduced health risk
4-6	Health risk for sensitive people
7-10	Increased [test vs. high] health risk
>10	High [test vs. very high] health risk

## C5 – Health Risk Messages

Note 0-3 etc. refers to index value, each row is an alternative message.

### **0 to 3 messages (seasonally appropriate)**

Ideal conditions for outdoor activities and exercise

Good opportunity to get some fresh air

Enjoy normal activities outdoors

No need to modify outdoor activities.

### **4-6 messages rescheduling; distinguish vs. healthy people**

If you suffer from heart or lung disease, including asthma and are experiencing symptoms as the AHI increases, reduce physical exertion outdoors, and follow your doctor's advice about managing your condition.

Most healthy people do not need to modify outdoor activities.

Asthmatics and people with heart or lung disease should be attentive to their symptoms as the AHI increases. Follow your doctor's advice about managing your condition and plan outdoor activities for periods when the AHI is lower.

Healthy people can carry on with normal activities.

Some people with heart or lung disease, including asthma, may experience a worsening of their condition or experience symptoms as the AHI increases. Modify your activities accordingly and follow your doctor's advice to best manage your condition.

Healthy people are unlikely to experience symptoms at this level.

If you suffer from heart or lung disease, including asthma, monitor the AHI and your symptoms. Reschedule your activities to periods when the AHI is lower and follow your doctor's advice to best manage your condition.

### **7-10 messages rescheduling; distinguish vs. healthy people**

Children, the elderly, asthmatics and people with heart or lung disease should consider reducing exertion. Follow your doctor's advice about how to best manage your condition. Anyone experiencing discomfort should consider rescheduling strenuous activity to periods when the AHI is lower.

If you are asthmatic or suffer from heart or lung disease, or if you experience symptoms such as coughing or throat irritation, you can reduce your exposure to air pollution by limiting your exertion, outdoors. Follow your doctor's advice about managing your condition.

### **10+ messages rescheduling**

Anyone may experience discomfort, especially people with asthma, heart or lung disease. Reduce your level of exertion outdoors.

If you are asthmatic or suffer from heart or lung disease, or if you experience symptoms such as coughing or throat irritation, postpone outdoor activities to periods when the AHI is lower. Follow your doctor's advice about managing your condition.



## C6 – Air Health Facts

### **Index Reading: 0 to 3**

Riding your bike/ walking/ rollerblading to work is healthy for you and keeps the air clean. (use when seasonally appropriate)

A full bus takes 40 to 60 cars off the road.

Levels of most air pollutants are going down year by year. (use when locally appropriate)

### **Index Reading: 4 to 6**

There are two kinds of ozone: the ozone layer high above that protects us from the sun; and the ozone at ground level that irritates lungs.

Air pollution can affect your health now and many years from now.

Air pollution comes from both nearby sources (vehicles, industry) and far away, carried over 100s of kilometers.

Children inhale more pollution per kg of body weight than adults and are more active outdoors.

Make sure your indoor air is healthy.

A full bus takes 40 to 60 cars off the road.

### **Index Reading: 7 to 10+**

Air pollution can reach high levels even in parks and rural areas.

If you think your symptoms signify a serious health problem, seek medical attention.

People who work outdoors may be at-risk from air pollution.

You cannot always see or smell air pollution which is harmful to your health.

According to recent research, diabetics may also be at-risk from air pollution.

## C7 - Printed Sample of AQI Communications Piece

### Air Health Index

Northern Saskatchewan: Aug. 4, 2005, 9:00am

0 1 2 3 4 5 6 7 8 9 10 >>

# 5

## Rising health risk to elderly and at risk people: Smoke from regional forest fires

---

<p><b>At risk people:</b></p>  Stay indoors	<p><b>General population:</b></p>  No fires permitted
--	--

**Not sure if you're at risk?** Contact your community health nurse (123) 123-1234

**Forecast:** Northeast winds will continue to carry particulate into region through day.

---

**Air health fact:** 50% of all forest fires are caused by humans and are preventable.  
Learn more at [www.airhealthindex.ca](http://www.airhealthindex.ca)

### Indice de la santé de l'air

Nord Saskatchewan: le 4 août, 2005. 9h00

0 1 2 3 4 5 6 7 8 9 10 >>

# 5

## De la pollution des feux de forêts, à la hausse Danger augmentée pour les personnes à risque et personnes âgées

---

<p><b>Personnes à risques:</b></p>  Restez tranquille à l'intérieur pendant 24hrs	<p><b>Population générale:</b></p>  Feux interdits
--	---

**Êtes-vous à risques?** Contactez HealthLine au 1-877-860-0002

**Prévisions:** Le vent du nord-est amenerait des particules en region toute la journée augmentant le taux de la pollution.

---

**Fait Santé - Air:** 50% des feux de forêts sont causé par humains  
Renseignez-vous [www.sanitedelair.ca](http://www.sanitedelair.ca)

### Air Health Index

Toronto & region: Aug. 4, 2005, 8:00am

0 1 2 3 4 5 6 7 8 9 10 >>

# 8

## Health alert—all citizens Avoid physical activities outdoors

---

<p><b>At risk people:</b></p>  Remain indoors 24hrs	<p><b>General population:</b></p>  Reduce exposure to outdoor air as much as possible
--	--

**Not sure if you're at risk?** Contact your community health nurse (123) 123-1234

**Forecast:** Increasing temperature will increase pollutant health risk.

---

**Air health fact:** 50% of air pollution in Toronto region is a result of long range atmospheric transportation.  
Learn more at [www.airhealthindex.ca](http://www.airhealthindex.ca)

### Indice de la santé de l'air

Toronto, Ontario : le 4 août, 2005. 8h00

0 1 2 3 4 5 6 7 8 9 10 >>

# 8

## Alerte de pollution Evitez les activités physiques dehors

---

<p><b>Personnes à risques:</b></p>  Restez tranquille à l'intérieur pendant 24hrs	<p><b>Population générale:</b></p>  Evitez les activités physiques dehors
--	--

**Êtes-vous à risques?** Contactez Toronto Health Connection 416-338-7600

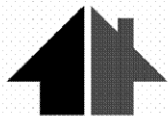
**Prévisions:** De la chaleur et de la haute pression vont contribuer à augmenter le niveau de la pollution pendant la journée.

---

**Fait Santé - Air:** 30% de la pollution d'air en Ontario est du type industriel, transporté du nord-est des EU.  
Renseignez-vous [www.sanitedelair.ca](http://www.sanitedelair.ca)

APPENDIX D:  
QUALITATIVE ASSESSMENT – SCREENER





# research house

13853 Air

Respondent Name: \_\_\_\_\_

Home Phone #: \_\_\_\_\_

Business Phone #: \_\_\_\_\_

E-Mail: \_\_\_\_\_

Group #: \_\_\_\_\_ Recruiter: \_\_\_\_\_

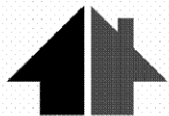
**Recruit 10 per group**

<b>GROUP 1</b> TUESDAY FEBRUARY 22 <sup>ND</sup> 5:30 PM SENSITIZED TORONTO	<b>GROUP 2</b> TUESDAY FEBRUARY 22 <sup>ND</sup> 8:00 PM NON-SENSITIZED TORONTO	<b>GROUP 3</b> WEDNESDAY FEBRUARY 23 <sup>RD</sup> 5:30 PM SENSITIZED MONTREAL FRENCH	<b>GROUP 4</b> WEDNESDAY FEBRUARY 23 <sup>RD</sup> 8:00 PM NON-SENSITIZED MONTREAL FRENCH
<b>GROUP 5</b> THURSDAY FEBRUARY 24 <sup>TH</sup> 5:30 PM SENSITIZED FREDERICTON ENGLISH	<b>GROUP 6</b> THURSDAY FEBRUARY 24 <sup>TH</sup> 8:00 PM NON-SENSITIZED FREDERICTON FRENCH	<b>GROUP 7</b> MONDAY FEBRUARY 28 <sup>TH</sup> 5:30 PM SENSITIZED WINNIPEG	<b>GROUP 8</b> MONDAY FEBRUARY 28 <sup>TH</sup> 8:00 PM NON-SENSITIZED WINNIPEG
<b>GROUP 9</b> TUESDAY MARCH 1 <sup>ST</sup> 5:30 PM SENSITIZED KELOWNA	<b>GROUP 10</b> TUESDAY MARCH 1 <sup>ST</sup> 8:00 PM NON-SENSITIZED KELOWNA	<b>GROUP 11</b> WEDNESDAY MARCH 2 <sup>ND</sup> 5:30 PM SENSITIZED VANCOUVER	<b>GROUP 12</b> WEDNESDAY MARCH 2 <sup>ND</sup> 8:00 PM NON-SENSITIZED VANCOUVER

Hello, my name is \_\_\_\_\_ from Research House Inc., we are calling today to invite you to a focus group discussion scheduled for (SEE ABOVE). Your participation in the research is completely voluntary and your decision to participate or not will not affect any dealings you may have with Research House Inc. All information collected, used and/or disclosed will be used for research purposes only and administered as per the requirements of the Privacy Act. You will also be asked to sign a waiver to acknowledge that you may be audio and/or video taped during the session and will also participate in Qualitative Central. The session will last a maximum of 2 hours and you will receive a cash honorarium as a thank you for attending the session. May we have your permission to ask you some further question to see if you fit in our study?

Yes.....1  
No.....2 – **THANK AND TERMINATE**

INDICATE: Male.....1 – **RECRUIT 5 PER GROUP**  
Female.....2 – **RECRUIT 5 PER GROUP**



# research house

1. Are you or is any member of your household or immediate family employed in, or ever been employed in:

	1		Ever	
	No	Yes	No	Yes
Market Research	( )	( )	( )	( )
Marketing	( )	( )	( )	( )
Public Relations	( )	( )	( )	( )
Any Media (Print, Radio, TV)	( )	( )	( )	( )
A Member of ACTRA	( )	( )	( )	( )
Advertising	( )	( )	( )	( )
Municipal Government	( )	( )	( )	( )
Provincial Government	( )	( )	( )	( )
Federal Government	( )	( )	( )	( )
Public Service / Elected Official	( )	( )	( )	( )

**IF YES TO ANY OF THE ABOVE – THANK AND TERMINATE**

2. May I have your age, please?

\_\_\_\_\_ SPECIFY

- Under 16 years.....1 – **THANK AND TERMINATE**
- 16 – 24 years.....2 – **MIN (1) PER GROUP**
- 25 – 34 years.....3 – **MIN (1) PER GROUP**
- 35 – 44 years.....4 – **MIN (1) PER GROUP**
- 45 – 54 years.....5 – **MIN (1) PER GROUP**
- 55 – 65 years.....6 – **MIN (1) PER GROUP**
- Over 65 years.....7– **MIN (1) PER GROUP**

3a. What is your current employment status?

- Full-time Employed ( )
- Part-time Employed ( )
- Homemaker ( )
- Student ( )
- Retired ( )
- Unemployed ( ) – **MAX. 2 PER GROUP**

3b. What is your occupation?

\_\_\_\_\_ JOB TITLE \_\_\_\_\_ TYPE / NAME OF COMPANY

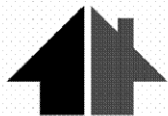
IF MARRIED/Common-LAW ASK – WHAT IS YOUR SPOUSE'S OCCUPATION?

\_\_\_\_\_ JOB TITLE \_\_\_\_\_ TYPE / NAME OF COMPANY

**IF ANY CONNECTION TO STANDARD OR PROJECT-RELATED OCCUPATION – THANK AND TERMINATE**

4a. As we need to speak with people from all walks of life, could you please tell me into which category I may place your total annual household income? Would that be...?

- Under \$40,000.....1
- \$40,000 - \$60,000.....2
- \$60,000 - \$80,000.....3 – **ENSURE GOOD MIX**
- Over \$80,000.....4



4b. Could you please tell me, what is the last level of education that you have completed?

- Some High School.....1 – **THANK AND TERMINATE**
- High School.....2
- Some College / University.....3 – **ENSURE GOOD MIX**
- Completed College / University.....4

5a. Do you have any children living at home?

- Yes.....1
- No.....2 – **SKIP TO Q. 6**

5b. What are the ages of your children, living at home?

\_\_\_\_\_

6. Do you or anyone in your household suffer from any of the following?

	SELF		SOMEONE IN HH
Asthma.....1			1
Breathing Difficulties.....2	-	<b>(4) PER GROUP -</b>	2
Chronic Bronchitis.....3		<b>MUST MENTION</b>	3
Other Respiratory Problems.....4		<b>SELF OR SOMEONE</b>	4
Heart Problems.....5		<b>ELSE IN HH</b>	5
High Blood Pressure.....6			6

**(4) PER GROUP MUST EITHER THEMSELVES SUFFER FROM ONE OF THE LISTED OR HAVE SOMEONE IN HOUSEHOLD WHO SUFFERS FROM ONE OF THE LISTED**

7. How would you rate the quality of air in your community, that is, the presence or absence of pollution? Is it generally?

- Excellent.....1
- Good.....2
- Only Fair.....3 – **SEE QUOTAS BELOW**
- Poor.....4

8. How much of a hazard do you believe air pollution presents to the health of people living in your area? Does it present:

- A Very Serious Hazard.....1– **SEE QUOTAS BELOW**
- A Somewhat Serious Hazard.....2
- Not a Serious Hazard.....3
- No Health Hazard at All.....4

**QUOTAS**

**GROUPS 1, 3, 5, 7, 9, 11**

**SENSITIZED**

**ALL ANSWER 3 OR 4 AT Q.7 AND ANSWER 1 OR 2 AT Q. 8**

**GROUPS 2, 4, 6, 8, 10, 12**

**NON-SENSITIZED**



# research house

The next couple of questions deal with your imagination. Have a little fun with these questions and feel free to answer in any way, as there are no incorrect answers.

9. What would be the first thing you would do, if you had just won one million dollars?

---

---

---

10. If you were a book in a library, what book would you be and WHY?

---

---

---

- 
- \_\_\_\_\_ ANSWERS SPONTANEOUSLY
  - \_\_\_\_\_ VERY ENTHUSIASTIC
  - \_\_\_\_\_ VERY SURE OF HIMSELF / HERSELF
  - \_\_\_\_\_ CARRIES ON A GOOD CONVERSATION

**NOTE: PAY EXTRA ATTENTION TO RESPONDENT ANSWERS – LOOK FOR COMPLEX, CREATIVE ANSWERS AND NOT JUST MEANINGLESS ANSWERS. LOOK FOR IMAGINATION AND A SENSE OF CREATIVITY / PARTICIPATION.**

11. Participants in group discussions are asked to voice their opinions and thoughts, how comfortable are you, in voicing your opinions in front of others? Are you...?

- Very Comfortable.....1 – **MIN 50% PER GROUP**
- Fairly Comfortable.....2
- Comfortable.....3
- Not Very Comfortable.....4 – **THANK AND TERMINATE**
- Very Uncomfortable.....5 – **THANK AND TERMINATE**

12a. Have you ever attended a focus group or one to one discussion for which you have received a sum of money, here or elsewhere?

- Yes.....1 – **MAX (50%) PER GROUP**
- No.....2 – **SKIP TO Q. 13a**

12b. When did you last attend one of these discussions?

\_\_\_\_\_ **TERMINATE IF IN THE PAST 6 MONTHS**

12c. How many focus group or one-to-one discussions have you attended in the past 5 years?

\_\_\_\_\_ **(SPECIFY) IF MORE THAN 5 – THANK AND TERMINATE**

12d. Would you please tell me the topics discussed?

\_\_\_\_\_ **IF HEALTH ISSUES – THANK AND TERMINATE**





13a. What country were you born in?

Canada.....1 – **MIN 50% PER GROUP**  
Other.....2 – **SPECIFY**

13b. What language do you speak most often at home?

English.....1  
Other.....2 – **THANK AND TERMINATE**

15. Have you been invited to another of these focus groups or interviews in the near future?

Yes.....1 – **THANK AND TERMINATE**  
No.....2

16. Sometimes participants are asked to write out their answers on a questionnaire or watch a TV commercial during the discussion. Is there any reason why you could not participate?

Yes.....1 – **THANK AND TERMINATE**  
No.....2

**NOTE: IF RESPONDENT OFFERS ANY REASON SUCH AS SIGHT OR HEARING PROBLEM, A WRITTEN OR VERBAL LANGUAGE PROBLEM, A CONCERN WITH NOT BEING ABLE TO COMMUNICATE EFFECTIVELY – THANK AND TERMINATE**

**IMPORTANT:**

The session is 2 hours in length, but we are asking that all participants arrive 10 minutes prior to the start time of the session. Are you able to be at the research facility 10 minutes prior to the session time?

Yes.....1  
No.....2 – **TERMINATE**

All participants in this study are asked to bring to the group PICTURE IDENTIFICATION. If you do not bring your personal identification then you will not be able to participate in the session and you will not receive the incentive fee. Are you going to bring along your ID?

Yes 1  
No 2-**TERMINATE**

I would like to invite you to a group discussion on:

The group discussion will last approximately 2 hours and we offer each participant a \$60.00 cash gift as a token of our appreciation. I should also tell you that the groups will be audiotaped for research purposes and members of the research team will be observing the discussion from an adjoining room. Everything you say will be kept confidential.

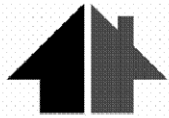
[ ] CHECK TO INDICATE YOU HAVE READ THE STATEMENT TO THE RESPONDENT.

**GROUP 1  
TUESDAY  
FEBRUARY 22<sup>ND</sup>  
5:30 PM  
SENSITIZED  
TORONTO**

**GROUP 2  
TUESDAY  
FEBRUARY 22<sup>ND</sup>  
8:00 PM  
NON-SENSITIZED  
TORONTO**

**GROUP 3  
WEDNESDAY  
FEBRUARY 23<sup>RD</sup>  
5:30 PM  
SENSITIZED  
MONTREAL  
FRENCH**

**GROUP 4  
WEDNESDAY  
FEBRUARY 23<sup>RD</sup>  
8:00 PM  
NON-SENSITIZED  
MONTREAL  
FRENCH**



# research house

**GROUP 5**  
**THURSDAY**  
**FEBRUARY 24<sup>TH</sup>**  
**5:30 PM**  
**SENSITIZED**  
**FREDERICTON**  
**ENGLISH**

**GROUP 6**  
**THURSDAY**  
**FEBRUARY 24<sup>TH</sup>**  
**8:00 PM**  
**NON-SENSITIZED**  
**FREDERICTON**  
**FRENCH**

**GROUP 7**  
**MONDAY**  
**FEBRUARY 28<sup>TH</sup>**  
**5:30 PM**  
**SENSITIZED**  
**WINNIPEG**

**GROUP 8**  
**MONDAY**  
**FEBRUARY 28<sup>TH</sup>**  
**8:00 PM**  
**NON-SENSITIZED**  
**WINNIPEG**

**GROUP 9**  
**TUESDAY**  
**MARCH 1<sup>ST</sup>**  
**5:30 PM**  
**SENSITIZED**  
**KELOWNA**

**GROUP 10**  
**TUESDAY**  
**MARCH 1<sup>ST</sup>**  
**8:00 PM**  
**NON-SENSITIZED**  
**KELOWNA**

**GROUP 11**  
**WEDNESDAY**  
**MARCH 2<sup>ND</sup>**  
**5:30 PM**  
**SENSITIZED**  
**VANCOUVER**

**GROUP 12**  
**WEDNESDAY**  
**MARCH 2<sup>ND</sup>**  
**8:00 PM**  
**NON-SENSITIZED**  
**VANCOUVER**

**INCENTIVE: \$60**

**LENGTH OF GROUP: 2 HOURS**

**LOCATION:**

Feb 22<sup>nd</sup>  
Toronto  
Research House  
1867 Yonge Street  
2nd Floor

Feb 23<sup>rd</sup>  
Montreal  
MBA (Mayer, Bourbonnais & Aube)  
1470 Peel St  
Suite 800

Feb 24<sup>th</sup>  
Fredericton  
Delta Fredericton Hotel  
225 Woodstock Road

Feb 28<sup>th</sup>  
Winnipeg  
Prairie Research  
500 - 363 Broadway

March 1<sup>st</sup>  
Kelowna  
Manteo Resort  
3762 Lakeshore Road

March 2<sup>nd</sup>  
Vancouver  
Vancouver Focus  
1177 Hornby Street,  
Main Floor,  
604.689.5511

APPENDIX E:  
QUALITATIVE ASSESSMENT – MODERATOR'S GUIDE

---



**HC AQI Focus Groups**  
MODERATOR'S GUIDE: final

**Introduction (10 Minutes 0:00)**

Hello, my name is \_\_\_\_\_. I work for the Environics Research Group Ltd, a national public opinion research firm.

- ◆ We do telephone surveys – and from time to time, we do focus groups. Focus groups allow us to get more detail on topics and issues (thoughts, feelings and opinions) we are investigating and to show materials to get feedback.
  - ◆ We are not here to reach a consensus. Everyone will have the opportunity to participate. There are no right or wrong answers – you help me by giving me your opinions, thoughts and ideas. It is also important to respect the views of others in the room.
  - ◆ This meeting will be audio- and videotaped in order to help us capture all of the ideas that will be discussed this evening to help us prepare a report of the sessions' findings. Indicate (or refer to) observers – they are here to observe the session.
  - ◆ Everything discussed here will be kept in complete confidentiality – no names will be attached to the results in any way. Feel free to use your first name only.
  - ◆ Today, we are going to talk about some specific communications materials and get your views on them. Please do not look at any of the materials in front of you until I ask you to.
- 
- Let's get started as we have a lot to cover.
  - Let's first go around the table quickly so you can introduce yourselves. Just give me your first name and something interesting about yourself, work or hobby or other interest, etc.

To set the context for what we will be discussing, I first want to tell you that Health Canada and Environment Canada are developing a nationally standardized system for communicating the air quality or level of air pollution.

**Item 1:**

**Greyscale bar with numbers only (no text) (15 minutes): 0:10.00**

Participants will be asked to turn over the first sheet(s), with low, medium and high numbers on the greyscale bar, for a few seconds (when instructed to do so

and then turn them over face down again), and then answer questions on a questionnaire. *(This obtains individual responses before group discussion).*

**Questionnaire for item 1:**

- What is the main thing you recall?
- What does it mean?
- When you saw this what did you think/feel?
- What else do you remember?
- How would you react to this if it was part of an announcement in a newspaper?

**Discussion of their responses to 5-10 second exposure of first item:**

- Share with me what you wrote down
- What do you recall?
- What does it mean?
- When you saw this what did you think/feel?
- What else do you remember?
- How would you react to this if it was part of an announcement in a newspaper?

Probe extensively to understand responses and underlying motivations, beliefs, etc.

**Note: These and future examples shown to respondents can be rotated to some degree to provide different combinations of low, medium and high index levels.**

**Item 2:**

**Colour bar (5 minutes): 0:25**

I would now like you to look at another version of what we just discussed.

**Discussion of their reactions to item 2:**

- What, if anything, does the colour add to this index?
- What, if anything, do the colours mean to you?

Probe extensively to understand responses and underlying motivations, beliefs, etc.

**Item 3:**

**Colour bar with Numbers, Health Risk Descriptor and Forecast (15 minutes): 0:30**

Participants will be asked to turn over the sheet(s) for a few seconds (when instructed to do so and then turn them over face down again), and then answer questions on a questionnaire. *(This obtains individual responses before group*

*discussion*).

**Questionnaire for item 3:**

- What is the main thing you recall?
- What does it mean?
- When you saw this what did you think/feel?
- What else do you remember?
- How would you react to this if it was part of an announcement in a newspaper?

**Discussion of their responses to 5-10 second exposure of item 3:**

- Share with me what you wrote down
- What do you recall?
- What does it mean?
- When you saw this what did you think/feel?
- What else do you remember?
- How would you react to this if it was part of an announcement in a newspaper?
- Anything else?

Probe extensively to understand responses and underlying motivations, beliefs, etc.

Prompts:

- What did it say about health (risks)?
- What did it say in terms of a forecast?
- Probe: How useful is this (forecast aspect)?
- And to what extent would you use this type of forecast to plan your day?

**Item 4:**

**Health Risk Messages (20 minutes): 0:45**

Moderator will go page by page with participants through Category Labels, Health Risk Messages (0-3, 4-6, 7-10. 10+) and Air & Health Facts, and obtain their reactions and feedback.

Probe:

- Relevance
- Value
- Most appropriate term or message
  
- How would you react to this if it was part of an announcement in a newspaper?

Probe extensively to understand responses and underlying motivations, beliefs, etc.

Prompts:

- To what extent are these messages appropriate or believable? Why do you say that?
- To what extent would you act on these messages/follow the advice?
- To what extent would you take the sort of action that is suggested here? Help me understand what you are saying? (i.e. Why/why not?)

Hand out alternative health risk messages (a message for each reading on the scale rather than for a range).

- What are your reactions to this concept?
- And to the sample messages?
- Are these any better or worse than the other messages (for the ranges on the scale)? Why do you say that?

### **Item 5:**

#### **Air and Health Facts (10 minutes): 1:05**

Distribute sheet(s) with air and health facts.

Discussion:

- Why do you think these would be part of an announcement about the air quality?
- To what extent are these of value to you? How useful or helpful are they?
- How important are they?
- How credible/believable are they?
- Any other thoughts or reactions?

### **Item 6:**

#### **Complete (print) samples (15 minutes): 1:15**

Distribute sheet(s) with complete print samples. (We could give each participant one or two samples – and use different samples in the different sessions).

Now I would like you to take a look at a complete announcement – something you would find in the newspaper every day (or see on TV or on a website).

I would like you to take a look at this and mark on it:

- Those elements that you feel are interesting, good, important, clear, or useful/helpful information (mark with a plus sign in a circle).
- Those elements that you feel are puzzling, confusing, unclear or unnecessary information (mark with a minus sign in a circle).

#### **Discussion of item 6:**

- Share with me what you circled with a plus sign as being of interest, etc. Probe as appropriate.
- And what, if anything, did you find puzzling? And what, if anything, did you react negatively to? Probe to understand reasons.
- How effective is this message overall? Help me understand what you are getting at here. (Why/why not?)



- To what extent does it get your attention? What elements get your attention?

**Call to action (5 minutes): 1:30**

- If you saw these announcements in the media, to what extent would you consider taking the action advised? Why is that? Which advice and why?

**Item 7:**

**Index Names: (15 minutes): 1:35**

Give each participant a sheet with the list of possible names for the index. You have a couple of minutes to look at these and select which, if any, you personally feel is the most appropriate name for this tool.

- Discussion of selections and reasons.

Note: If there is time, there will be a 5-minute exercise in which participants work in pairs to come up with any alternative suggestions in terms of the most appropriate name for this tool.

(After the first group, the order was reversed with the unaided/brainstorming of names taking place first, followed by the reactions to the list of possible names.)

**Moderator goes to back room to check on any additional questions or clarifications.**

**Wrap up: (10 minutes): 1:50**

- Additional questions or clarifications:

Two final questions and I'd like to go around the table and hear from you one by one.

- Firstly, what is the most interesting thing that you learned here today and why, and, secondly, what action, if any, are you likely to take as a result of what you have heard or seen today?

**(2:00) Many thanks for your time and participation.**