Region of Waterloo
Outdoor Air Quality
Info Booklet
Outdoor Air Quality – Waterloo Region

According to Environment Canada, “air pollution is a broad term applied to any chemical, physical, or biological agent that modifies the natural characteristics of the atmosphere”. Air pollution results from both natural sources and human activity. Natural sources of air pollution include forest fires or dust storms. Human activities resulting in air pollution include burning gas and oil for heat, transportation, and industrial processes. The significance and impact of air pollution is related to the sources of air pollution and types of contaminants. Individual air pollutants are different from one another in their chemical composition, reactions with other chemicals, sources, persistence, ability to travel in the atmosphere and impacts.

This resource will examine the range of factors that contribute to poor air quality, focus on the health effects of outdoor air pollution, and examine local activities that can help to improve air quality in Waterloo Region.
Types and Sources of Pollutants

Air pollution is made up of gases, liquids, and particles that can be harmful to humans and the environment.

Pollutants come from a wide range of sources, including vehicle exhaust, industrial processes, energy generation, home and building heating, wood burning, and construction dust.

Most of the air pollution that we live with on a day-to-day basis is created by transportation and industry, through the production of vehicle exhaust and industrial emissions (see Table 1). Although trans-boundary air pollution (pollution that travels across geographical borders) is responsible for a lot of Ontario’s smog, a significant amount is generated locally. Several of these sources of air pollution also generate greenhouse gases that contribute to climate change.

Smog, the grey-brown haze that sometimes accompanies hot days, is a term used to describe a harmful mixture of air pollutants. It is usually formed by a combination of ground level ozone and small particles, as well as gases, road and construction dust, sunlight, and heat.

Table 1: Common Sources of Air Pollutants, Ontario

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Main Sources by Sector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fine particulate matter (PM2.5)</td>
<td>Residential, industrial, transportation</td>
</tr>
<tr>
<td>Ground-level ozone (03)</td>
<td>Transportation</td>
</tr>
<tr>
<td>Nitrogen oxides (NOX)</td>
<td>Transportation</td>
</tr>
<tr>
<td>Carbon monoxide</td>
<td>Transportation</td>
</tr>
<tr>
<td>Sulphur dioxide (SO2)</td>
<td>Industrial</td>
</tr>
</tbody>
</table>
Health Effects from Air Pollution

The impact of air pollution and smog on health will vary depending on factors such as:

- The concentration of pollutants
- The frequency and duration of exposure
- A person’s age and general health status

 Peaks in air pollution can:

- Lead to coughing and wheezing, and make it harder to breathe
- Irritate the eyes, nose and throat
- Aggravate existing lung and heart conditions, such as asthma, chronic bronchitis, emphysema and angina

People with heart or lung problems, older adults, and children are at higher risk of health effects. Healthy people may also be affected, particularly those who work and exercise outdoors, because when people do strenuous work or physical exercise, they inhale air deeper into the lungs and mostly through the mouth (instead of using the filtering function of the nose).
Measuring Air Quality in Waterloo Region; Air Quality Health Index

To protect yourself from the potential adverse health effects of smog, you need to know when air quality is poor and take action to reduce your exposure to it. Plan ahead by checking the local air quality forecast or the daily Air Quality Health Index (AQHI) reading. Take note if there is an air quality alert issued for your area, especially from April to September, when poor air quality days are more likely to occur.

Air Quality Health Index (AQHI):

The Air Quality Health Index or “AQHI” is a scale designed to help you understand what the air quality around you means to your health. It is designed to help you protect your health through limiting exposure to air pollution and adjusting your activity during increased levels of air pollution.

<table>
<thead>
<tr>
<th>Health Risk</th>
<th>AQHI</th>
<th>At Risk Population*</th>
<th>General Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>1-3</td>
<td>Enjoy your usual outdoor activities.</td>
<td>Ideal air quality for outdoor activities.</td>
</tr>
<tr>
<td>Moderate</td>
<td>4-6</td>
<td>Consider reducing or rescheduling strenuous activities outdoors if you are experiencing symptoms.</td>
<td>No need to modify your usual outdoor activities unless you experience symptoms such as coughing and throat irritation.</td>
</tr>
<tr>
<td>High</td>
<td>7-10</td>
<td>Reduce or reschedule strenuous activities outdoors. Children and the elderly should also take it easy.</td>
<td>Consider reducing or rescheduling strenuous activities outdoors if you experience symptoms such as coughing and throat irritation.</td>
</tr>
<tr>
<td>Very High</td>
<td>Above 10</td>
<td>Avoid strenuous activities outdoors. Children and the elderly should also avoid outdoor physical exertion.</td>
<td>Reduce or reschedule strenuous activities outdoors, especially if you experience symptoms such as coughing and throat irritation.</td>
</tr>
</tbody>
</table>

* People with heart or breathing problems are at greater risk. Follow your doctor’s usual advice about exercising and managing your condition.

Table 2: Number of poor Air Quality Index (AQI) days, 2011–2014

<table>
<thead>
<tr>
<th>Ontario Ministry of the Environment – Kitchener Monitoring Site</th>
<th>Number of Poor AQI Days</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>1</td>
</tr>
<tr>
<td>2012</td>
<td>1</td>
</tr>
<tr>
<td>2013</td>
<td>1</td>
</tr>
<tr>
<td>2014</td>
<td>0</td>
</tr>
</tbody>
</table>

Measuring Air Quality in Waterloo Region; Air Quality Advisories

If a high risk AQHI value is forecast to last for 1 to 2 hours, then a Special Air Quality Statement (SAQS) will be issued.

If a high risk AQHI is forecast to be persistent with a duration of at least 3 hours, then a Smog and Air Health Advisory (SAHA) will be issued.

The purpose of the SAQS is to encourage you to be precautionary and vigilant of your health as it relates to air pollution. Both SAQS and SAHA are issued jointly by Environment Canada and the Ministry of the Environment and Climate Change.

STAY INFORMED ON YOUR DAILY AIR QUALITY HEALTH INDEX

Visit www.airqualityontario.com to:

- **Sign up for air quality alerts by email:** Choose “Sign up: Email Air Quality Alerts” and enter your email address.
- **Check local air quality forecasts:** Choose “Map: Today’s Forecast” then choose your closet station from the map, then choose “Current AQHI Details”.
- **Check historical air quality health index readings:** Choose “2015 AQHI Readings” after clicking on your preferred station on the map.
What can YOU do to Help?

TAKE THESE MEASURES TO HELP IMPROVE AIR QUALITY IN WATERLOO REGION

LEAVE EARLY TO AVOID MORNING RUSH HOUR
DON’T BURN TRASH OR LEAVES
TURN YOUR LIGHTS OFF WHEN NOT IN USE
CARPOOL TO WORK, LUNCH OR SCHOOL
DON’T DRIVE TO LUNCH – BRING ONE INSTEAD
BIKE TO WORK, THE STORE OR THE BUS STOP
USE PUBLIC TRANSIT, LIKE THE ION
AVOID DRIVE-THRUS TO PREVENT IDLING
For more information, please contact:
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Region of Waterloo Public Health
Phone: 519-575-4400
TTY: 519-575-4608

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Accessible formats of this document are available upon request.