

# Framework for Managing Risk

Ontario protects air quality through a comprehensive air management framework that includes regulations, targeted programs and partnerships with other jurisdictions to address sources of air pollution. This framework addresses emissions from the electricity sector (including coal-fired generation stations), vehicles, cross-border sources, as well as commercial and industrial facilities.

Ontario's local air quality regulation (O. Reg. 419/05: Air Pollution – Local Air Quality) works within the province's air management framework by regulating air contaminants released into communities by various sources, including local industrial and commercial facilities. The regulation aims to limit exposure to substances released into air that can affect human health and the environment, while allowing industry to operate responsibly under a set of rules that are publicly transparent.

Under the regulation, industry can implement one of three compliance approaches, each designed to manage the risks associated with a facility's air emissions:

- Meet the general air standard
- Request and meet a site-specific standard or
- Register and meet the requirements under a technical standard (if available).

These compliance approaches are described in detail in separate fact sheets. This fact sheet describes how risk is managed under the various compliance approaches.

## What is risk?

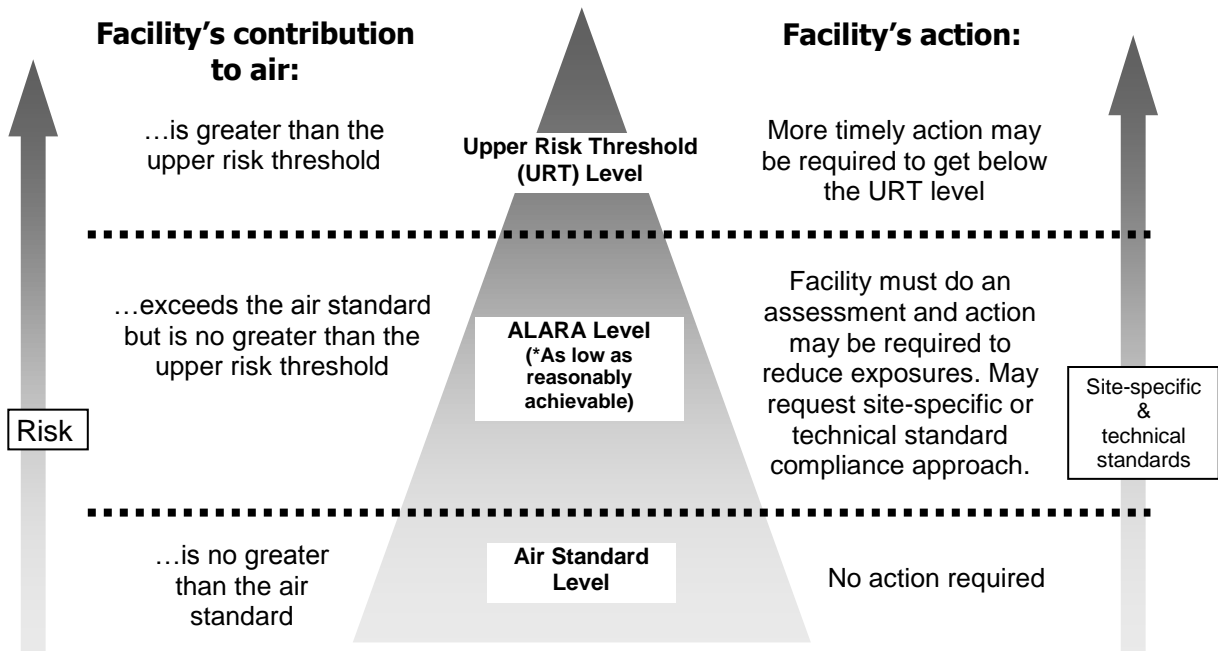
Risk is the possibility that an undesirable event will occur. In the context of health and environmental risks, the undesirable event may be a harmful effect from exposure to a contaminant. Risk is estimated by addressing the following questions:

- What adverse effect is associated with the contaminant?
- What type of exposure to the contaminant may cause the adverse effect?
- How likely is this exposure to occur?

## Framework for managing risk

The framework helps manage risks to local communities from a facility's emissions of a contaminant to air. The maximum level of a contaminant around a facility as a result of its emissions is defined within three ranges listed below. More timely actions to reduce exposures are required to be taken as contributions increase.

- Air Standard Level
- As Low As Reasonably Achievable (ALARA) Level
- Upper Risk Threshold Level



## Air Standard Level

Air standards are set for contaminants at concentrations that are protective against an adverse effect. These general air standards are used to evaluate the contributions of a contaminant from a regulated facility. If the general air standard is met by a regulated facility, its contribution of this contaminant to air represents negligible risk.

The Ministry of the Environment uses scientific studies to understand how contaminants may cause adverse effects and, based on these studies, calculates a concentration in air that presents negligible risk. For most contaminants, air standards are set at concentrations well below those where effects are observed with adjustments made for uncertainty in the data and variation in sensitivities of the population. For cancer causing contaminants—carcinogens—we set air standards at a concentration equivalent to a cancer risk level of one in a million. So, if a person is continuously exposed to this concentration over a lifetime, the additional cancer risk from this exposure would be one in a million.

**Action Required:** No further assessment of risk or regulatory action is required if the air standard is met.

## As Low As Reasonably Achievable (ALARA) Level

If a regulated facility's contribution of a contaminant to air exceeds the general air standard, it may present more than a negligible risk. In this situation, a facility will have to act to reduce the exposure to meet the provincial air standard or as low as reasonably achievable by operating under a site-specific or technical standard.

**Action Required:** The ALARA principle is imbedded in the site-specific and technical standards compliance approaches.

When the Ministry of the Environment reviews a site-specific standard request, it requires the facility to submit information about the potential exposures. This includes a more detailed assessment at specific locations where human exposure is likely, such as schools, daycare facilities, hospitals and residences and includes consideration of the frequency, magnitude and duration of exposures above the air standard. This allows the ministry to evaluate the potential effects that may result from the facility's emissions.

The site-specific and the technical standard compliance approaches identify key sources contributing most to exposures in the community. This information, along with a review of best available techniques to reduce exposures from those key sources, help determine when and how appropriate risk management actions should be taken.

These actions are communicated to the local community through postings on the [Environmental Registry](#) and other activities such as public meetings or community liaison groups. Ongoing improvement through best available technology is also a fundamental principle of the site-specific and technical standards compliance approaches.

## Upper Risk Threshold Level

The Upper Risk Threshold (URT) is a concentration of a contaminant in air, set above the general air standard. URTs are used by the ministry to manage risks both during and after the phase-in period of an air standard and also during the evaluation of requests for site-specific standards. For carcinogens, the Ministry of the Environment generally sets URTs at a concentration equivalent to a cancer risk level of one in ten thousand. For non-carcinogens, URTs are generally set at 10 times the air standard.

**Action Required:** The Ministry of the Environment's framework for managing risk aims to minimize exposures above the URT and identify facilities where more timely action is required.

If a facility's contributions of a contaminant to air exceed the URT of the air standard, the facility must notify the Ministry of the Environment immediately and assess the frequency, magnitude and duration of exposures in a more detailed report that must be submitted within 90 days. The assessment considers the same information as described above under the ALARA. Once risk levels are confirmed, more timely actions may be required to reduce risks below the URT.

## Does the framework eliminate risk?

The framework for managing risk is designed to reduce—as much as possible—the risks associated with a regulated facility's air emissions.

Because provincial air standards are set based on science, they may not be achievable by a facility or a sector due to unique technical or economic limitations. In these situations, the site-specific and the technical standard compliance approaches are available.

The Ministry of the Environment also recognizes that there are other sources that contribute to exposures within local communities. The local air quality regulation is used with other tools to manage air quality in Ontario.

The framework allows the Ministry of the Environment to work with facilities to reduce exposures in local communities. It also establishes an open and transparent process to keep communities informed about the actions facilities are taking to achieve compliance and give opportunities to provide input.

## Where can I get more information?

For a comprehensive list of MOE standards, guidelines and URTs, please refer to the Ministry of the Environment document entitled: [Summary of Standards and Guidelines to support Ontario Regulation 419: Air Pollution – Local Air Quality, April 2012 \(as amended\)](#). The document is available in two formats, sorted by chemical name and by Chemical Abstract System (CAS) Number.

For further information about [Ontario's Local Air Quality Regulation](#), please visit the Ministry of the Environment's web site at [www.ontario.ca/ministry-environment](http://www.ontario.ca/ministry-environment) or contact:

Public Information Centre  
Ministry of the Environment  
Tel: (416) 325-4000 or 1-800-565-4923  
TTY Line (for persons who are deaf or hard of hearing):  
416-326-9236 or 1-800-515-2759  
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