

Ministry of the Environment programs and initiatives

## Ontario's new landfill standards

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*New landfill standards, contained in Ontario Regulation 232/98, will come into effect Aug 1, 1998.*

*O. Reg. 232/98 will ensure Ontario landfills offer state-of-the-art environmental protection.*  
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The Ministry of the Environment has released comprehensive new landfill standards under the Environmental Protection Act. The new standards, contained in Ontario Regulation 232/98, apply to new or expanding landfill sites and include requirements for site design, operation, closure and financial assurance. The new standards apply to sites larger than 40,000 cubic metres which accept non-hazardous waste. The new standards take effect on August 1, 1998.

In conjunction with the accompanying detailed guideline *Landfill Standards - A Guideline on the Regulatory and Approval Requirements for New or Expanding Landfilling Sites* (PIBS 3651E), the new regulation will ensure Ontario landfills offer state-of-the-art environmental protection while bringing additional clarity and certainty to the landfill approvals process.

In addition to codifying many existing approval requirements, the new standards include new and more specific requirements in a number of areas - for example, air emissions control and groundwater protection. The standards cover:

- mandatory air emissions control for sites larger than three million cubic metres,
- assessment of groundwater and surface water conditions,
- design specifications for groundwater protection,
- buffer areas, final cover design and surface water control,
- site monitoring, record keeping and reporting,
- contingency planning for leachate control and

- financial assurance requirements for private sector landfills.

Following is a brief synopsis of the new standards. A detailed description of each standard is contained in the landfill standards guideline.

### Mandatory air emissions control

Landfill gas is produced by the natural biodegradation of organic waste in a landfill. In addition to the major constituents - methane and carbon dioxide - small amounts of other compounds such as hydrogen sulphide, mercaptans and non-methane organic compounds may also be present in landfill gas. These trace components may create nuisance odors and affect air quality. Methane gas and carbon dioxide are greenhouse gases which contribute to the problem of global warming. The methane component of landfill gas is also a potential source of energy.

The new standards require the collection of landfill gas for new or expanding sites larger than three million cubic metres (approximately 2.5 million tonnes). Although the precise quantities and nature of air emissions from each site may vary somewhat, air emissions control for larger landfills is considered good environmental practice.

For sites not included under the mandatory trigger, air emissions control may still be required in some cases. For example, factors such as waste type, site location close to a populated area and operational practices may indicate that air emissions should be controlled even though the site is smaller than three million cubic metres.

## Hydrogeology and surface water

The new standards require that the hydrogeologic and surface water conditions be assessed.

- Hydrogeologic assessment.  
Required for site specific design or to ensure the conditions for use of a generic design are present, and to establish an effective groundwater monitoring program and leachate contingency plan.
- Surface water assessment.  
Required to minimize or mitigate disturbance to existing surface water features, to determine the potential effects of surface water discharges and to establish a surface water monitoring network.

## Design report

Landfill sites must be well designed for groundwater and surface water protection to prevent effects from site operation and to facilitate site closure and post-closure care. The site design report required by the standards must describe all site features in sufficient detail to confirm the design will be acceptable. The design report must address:

- site boundaries, buffer area, waste fill area and contours, surface water control works, on-site roads and structures and final cover design,
- the design of any liner and leachate collection system,
- any air emission control works,
- monitoring facilities for groundwater, leachate and surface water,
- a contingency plan for leachate control and
- site closure and post-closure care requirements.

## Site design for groundwater protection

The new standards include two design approaches for achieving groundwater protection, either of which is acceptable:

- Site specific design.  
This approach allows a proponent to design the landfill to suit the local environmental setting provided the ministry's reasonable use limits (see sidebar) for groundwater protection are met. The site specific design approach is performance-based with the design required to meet the reasonable use limits for the site.
- Generic design.  
This approach allows the landfill owner to select one of two generic designs specified in the standards, provided the conditions for their use are met. The designs incorporate single and double liner systems and have been developed to ensure they will meet the ministry's reasonable use limits. The advantage of generic designs is the added certainty they bring to the approvals process.

## Site operations and monitoring

Good site operation and maintenance is necessary to ensure that environmental control works and monitoring facilities continue to function properly. Good operational procedures are also important in minimizing potential nuisance effects such as litter, noise, odor and dust.

The new standards require that an operations report be prepared describing the operation and maintenance procedures for the site. Depending on the size and operational requirements of the site, the report should address:

- a waste control program to ensure unacceptable wastes are not accepted for disposal,
- site supervision and security,
- waste disposal and covering activities,
- site monitoring, and
- a complaint response plan.

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### **Reasonable Use Guideline**

*The ministry's Reasonable Use Guideline (1994) establishes limits for allowable concentrations of contaminants based on background groundwater quality and the reasonable use of groundwater on adjacent property. The limits, among the most stringent in North America, are set so that there is no significant effect on the groundwater quality (commonly used for drinking water) of the adjacent property.*

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### Closure and post-closure care

Once a landfill site has reached capacity, final closure must be completed in a manner that ensures the long-term protection of the environment. The post-closure period for a landfill depends on its location, the level of engineering and the type of waste that has been deposited. The post-closure period may extend from many decades to several hundreds of years.

Site closure activities and post-closure care requirements include:

- notification procedures concerning the upcoming closure of the site,
  - completion and ongoing maintenance of the final cover and landscaping,
  - confirmation of the planned end use for the site,
- and
- final construction, operation and maintenance of environmental controls and monitoring facilities.

Post-closure care and reporting will be required for as long as contaminants remain in the site and pose a potential concern to the environment.

### Financial assurance

Financial assurance is required for private sector landfill sites to ensure that funds are available for site closure, post-closure care and contingencies. Financial assurance may be in the form of a cash deposit, letter of credit, surety bond or other securities acceptable to the ministry. Financial assurance is not required for a site owned by a municipality.

The amount of financial assurance for a particular landfill will depend on factors such as site design, type of waste, level of engineering and environmental setting, and is to be reviewed periodically to ensure that it is sufficient to cover the estimated costs.

### For further information contact:

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To obtain copies  
(a nominal charge will apply) of  
*Ontario Regulation 232/98*  
and the guideline  
*Landfill Standards – A Guideline on the  
Regulatory and Approval Requirements for  
New or Expanding Landfilling Sites*  
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