

NATURAL RESOURCES CONSERVATION AUTHORITY

DRAFT GUIDELINES FOR A CLOSURE PLAN

Definitions

'Closure' is the process of decommissioning and decontaminating an area or structure which could possibly result in the release of contaminants to air, soil or water.

'Closure Plan' describes the procedures for the removal of all the possible contaminants to air soil and water; equipment decontamination; sampling and laboratory analysis and closure to the satisfaction of the relevant standards and regulations stipulated by the National Environment and Planning Agency.

The following outlines the proposed guidelines for preparing Closure Plans.

A. General

1. The activities to be undertaken in the Plan should be clearly listed, with target dates for completion.
2. Waste produced due to closure activities must be both classified and quantified and the method of treatment and/or disposal stated.
3. The Plan should include soil (and groundwater, if accessible) testing for the presence of contamination. The test methods used for analysis of the soil and groundwater samples should be indicated.

B. Background Information

This should include:

1. The nature of the probable/ possible contamination including list of chemicals used on site
2. Any published or otherwise known information in order to establish whether adjacent property owners are or have been potential sources of contamination
3. Present zoning of the site and details of the zone categories of properties surrounding the site
4. Contour or topographic maps
5. Likely future use of the site
6. Risk Assessment
7. The results of any previous investigations of the site or surrounding land
8. Locations of surface water bodies, particularly where these may be adversely affected by contaminated groundwater or surface drainage from the site
9. Hydrogeological information which should include:
 - o The extent and use of aquifers in the area
 - o Estimated depth to groundwater
 - o Probable direction of groundwater flow and gradient
 - o Soils and soil properties (soil type, porosity and hydraulic conductivity)
 - o Location of any springs
 - o Sources of local municipal water supply and the location of registered private or industrial wells or bores
10. Solid waste disposal
11. Security of facility/area scheduled for closure. This should include the postage of relevant signs.

Note: The Authority may require remediation for sites found with significant levels of contamination. In such cases a Remediation Plan shall be submitted for review and approval.

Post Closure Monitoring must be conducted for an agreed period for any contamination that may be present on site. The parameters to be monitored, the frequency of monitoring, the test methods used for the analyses and the end points to be achieved must be clearly stated.

Interim Standards For Petroleum in Ground Water and Soil
Developed by NRCA and WRA
December 1998

Parameter	Ground Water	Soil
TPH	50 ppm	1000 ppm
BTEX	1000 ppb	135 ppm
Benzene	200 ppb	5 ppm
Toluene	nc	30 ppm
Ethyl Benzene	nc	50 ppm
Xylene	nc	50 ppm

Note:

BTEX¹ = **Benzene**² + **Toluene** + **Ethyl Benzene** + **Xylene**

TPH³ = **Total Petroleum Hydrocarbon**

nc = **no criteria set for this parameter**

ppm = **parts per million**

ppb = **parts per billion**

Source Documents

1. TAB #11 – Site Assessment and Clean-up Technology, *Environment Canada Environmental Protection Branch – Ontario Canada, Federal Programme Division. (Internet Link)*
2. Dasch, R., (1990) - Leaking Petroleum Product Underground Storage Tanks, Benzene Clean up for Ground Water – Texas Hazardous and Solid Waste Division Evaluating LPST Clean-up Guidelines.

¹ BTEX – This standard is additive for the components involved. This was set at 1000 ppb. Benzene is included in this value hence the other components should add up to 800 ppb.

² Benzene – This was set at 200 ppb as it was recognised that benzene being carcinogenic should not be arbitrarily included in the standard set for BTEX.

³ TPH – This is similar to the gasoline range organics which is the nomenclature used by the USEPA to refer to petroleum products within the range C1 – C10 of the carbon chain. Source document #2 has set this value at 50 ppm taking into account the quality and use of the water.

NRCA – Natural Resources Conservation Authority

WRA – Water Resources Authority