FREQUENTLY ASKED QUESTIONS (FAQ) & ANSWERS

Groundwater Protection Standards (GPS) based on use of Alternate Concentration Limits (ACLs) at solid **waste landfills**

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Introduction

The Virginia Solid Waste Management Regulations (VSWMR) require landfill owner/operators adopt Groundwater Protection Standards (GPS) based on risk-based alternate concentration Limits (ACLs) in those cases where no Federal Safe Drinking Water Act Maximum Contaminant Level (MCL) is available for use, or site-specific (background-based) concentrations have not been established.

Modifications to ACLs may periodically be needed in response to changes in USEPA risk-based health exposure or chemical behavior information used to develop the concentration limit values. For those landfills which received ACL use approval after May 2007, language included in the original Department approval allows for the automatic adoption/use of any revised ACLs upon Department issuance. Typically the Department issues revised ACLs on an annual basis, typically near the beginning of the calendar year so that all facilities will utilize a consistent set of ACLs in the monitoring events scheduled during the calendar year.

This Frequently Asked Questions (FAQ) document is provided as a reference for owner/operators who may have questions on the development and application of ACLs in their groundwater monitoring program. Under Amendment 7, ACL approval has been simplified, no longer requiring Variance submittal, fee payment or public notice.

If you need further assistance with ACL related issues, please contact the solid waste Groundwater Program Coordinator, Mr. Geoff Christe at (804) 698-4283 or Geoff.Christe@deq.virginia.gov, Ms. Sonal Iyer at (804) 698-4259 or Sonal.Iyer@deq.virginia.gov concerning ACL development using EPA data, or your Regional Office groundwater contact for questions about ACL use in your monitoring program.

1] Why must a solid waste landfill go through the process of establishing GPS?
See 20-81-250.A.6

GPS must be established whenever a landfill owner/operator finds one or more groundwater constituent present at a level that is statistically above the natural background level as this indicates a potential landfill-derived impact to the uppermost aquifer system.

2] Which constituents require a GPS in the monitoring program?
See 20-81-250.A.6.a

All Table 3.1 Column B constituents which have been detected on site (i.e., found above the LOD) are required to have GPS.

3] Where is the GPS compliance point?

GPS are applied to the groundwater sampling results obtained from the uppermost aquifer (i.e., the first aquifer encountered at depth) via compliance wells installed at (or as close as practical to), the waste management unit boundary (250.A.3.a.(2 and 3)) unless the Variance provisions of 9 VAC 20-81-740 have been approved by the Director.

It is important to realize that under the VSWMR, ACLs (as are all GPS) are applied (calculated) at the groundwater point of compliance. This differs from some Federal/EPA remedial programs which may allow GPS application to be established at the relevant point of exposure (i.e. property boundary, water well, surface water discharge point) which may lie beyond the boundary of the contaminant source.

4] Are GPS based on risk-related data?
See 20-81-250.A.6.b

GPS may be based on Federal MCLs where available, Department-approved, site-specific background concentration levels where available, or risk-based ACLs.

Federal MCLs consider risk factors during their development but are ultimately based on public comment, economic impact and/or municipal water supply treatment feasibility criteria.

Background-based GPS are not risk based values. They are established based on the Subtitle D premise that remediation shall not require aquifer clean up to levels below those naturally present.

ACL-based GPS are the only subset of GPS established solely on health-risk exposure criteria.

5] Are MCLs based on 'Total' concentrations or 'Dissolved' concentrations?

Federal MCL-based drinking water standards are based on 'total' concentration sampling data, not dissolved (filtered) concentration data. As a result, 40 CFR 258 requires groundwater samples obtained under the RCRA Subtitle D program be obtained and analyzed without field filtering in order to allow unbiased sample comparisons to MCL-based GPS.

6] What factors go into ACL development?

ACL use was originally defined under 40 CFR 264.9(b) for RCRA remediation actions.

ACL values are risk-based numbers created after factoring in the following constituent characteristics (Oral Reference Dose / Oral Slope Factor / Inhalation Reference Dose / Inhalation Slope Factor / Carcinogenic vs. non-Carcinogenic nature) and reflects EPA's hierarchy for resources:

(1) Integrated Risk Information System
(2) Provisional Peer-Reviewed Toxicity Values,
(3) U.S. Agency for Toxic Substance & Disease Registry Minimal Risk levels,
(4) The California Environmental Protection Agency/Office of Environmental Health Hazard Assessment's toxicity values,
(5) PPRTVE-appendix, and
(6) Health Effect Assessment Summary Tables.

7] How often can ACLs be revised by EPA?

Revisions may be required any time the toxicity values or exposure criteria benchmarks are updated by EPA and/or the other sources listed above. However, the Department, from a procedural standpoint, has determined that ACL revisions will be released no more than once a calendar year, optimally at the beginning of the calendar year so that the same set of values will apply to all facilities during the year's monitoring events.

8] Why are some ACL values lower than the MCL listed for the same constituent?

While Section 1412.b of the Safe Drinking Water Act amendment (42 U.S.C. 300(g-1(b)(4)) requires Maximum Contaminant Level Goals (MCLGs) be based on risk criteria, MCLs are allowed to be set as close as possible to MCLGs after accounting for possible economic impacts, public comment and practicality of currently available water treatment capabilities. It is important to remember that in the solid waste program, because MCL's have regulatory priority over ACLs, no Owner/Operator will be forced to use an ACL which is lower than the available MCL as a GPS .

9] Why aren't ACLs equivalent to published EPA Region III "RBC/RSL" numbers?

The most recent ACL calculations employ toxicity values and calculation methodology from the May 2011 RSL update with the exception that the non-carcinogenic ACL values are based on child receptor (May 2011 RSL table uses adult receptor).

Starting with next planned ACL update, which will be released in early 2013, ACL values will fully adapt RSL methodology along with toxicity values. Thus, the only difference between ACL and RSL values will be due to difference in toxicity values resulting from different update schedules for the two tables.

10] Do I have the option of not using ACLs as GPS?

The VSWMR mandate that GPS be set for each constituent 'detected' on site. If a landfill owner/operator establishes his/her 'detect' list and finds that there are certain constituents on that list that lack a Federal MCL and site-specific background, then ACL use is mandatory for those detected constituents.

11] If I have to use ACLs, do I have to use the Department provided REAMS-derived ACL list?

No.

The Department has been providing the generic ACLs (using the REAMS methodology) since 1994 to assist the facilities/consultants in proposing appropriate ACL values, and lessen the burden/cost associated with each facility having to develop their own independent ACL's which would still require DEQ's review and approval. In lieu of using the REAMS supplied ACL list, the facility has the option at any time to propose its own site-specific ACL.

Under the provisions of A.6.b.(4).(b).(ii), the Department uses the default lifetime cancer risk level of 10(-6) in the REAMS-calculated values. There may be site specific instances where an ACL may be proposed for use based on a 1 x 10-5 risk. These cases often result when a change in a toxicity value results in a facility exceeding GPS solely for an ACL-based constituent leading to potential corrective actions. Any site specific ACL proposal must still adhere to the methodology of 9 VAC 20-81-250.A.6.b.(4) which is derived from existing EPA ACL guidance. Any facility-proposed ACL-based GPS still need to be reviewed and approved by DEQ prior to use.

Prior to applying for site-specific ACL, the owner/operator is encouraged to meet with Regional staff to obtain buy-in before initiating the exercise.

12] Are there advantages to using the Department-provided ACL list?

Having a default ACL removes the need for the Owner/Operator to expend time and energy on developing individual lists for every site with identified impacts above background. This uniform approach allows facilities to instead apply resources toward the evaluation of the nature & extent of contamination as well as to assess potential clean-up remedies.

13] What 'benchmarks' must ACLs meet?

An ACL concentration value must meet the site and health-based criteria listed under 9 VAC 20-81-250.A.6.b.(4).(b) which includes potential adverse effects on groundwater, surface water, site use, and potential human exposure.

It is important to recognize that when calculating ACLs using the REAMS program or a site-specific model, exposure must take into account sensitive subgroups (i.e. children). Consistent with EPA's 1984 Groundwater Protection Strategy, all groundwater in the Commonwealth is to be considered a potential source of drinking water until such time as resource delineation or resource restriction is in place. ACLs are calculated based on potential future use (future exposure), not simply the current conditions on site.

The benefit of using the REAMS-derived numbers is that the resulting ACLs have already been determined to meet the regulatory criteria described above.

14] Why can't I continue to use the ACLs I already have listed in a previously-approved Variance petition or Permit amendment? I don't see any language in the VSWMR about ACL values 'expiring'.

The VSWMR does not contain language concerning termination or expiration of ACL values previously approved for use by the Department. However the Regulations do establish the performance criteria all ACLs must meet in order to be proposed for use. All ACL concentration values used as GPS must meet the health-based criteria listed under 9 VAC 20-81-250.A.6.b.(4).(b). If the baseline health criteria or chemical behavior data used by EPA in development of ACLs changes (because new information becomes available), any formerly calculated, REAMS-based values previously issued would no longer be able to be demonstrated as meeting the VSWMR criteria noted above.

15] Do I need formal Department approval to apply ACL revisions when they are issued?

Most likely no.

The Department has been including the language (or a comparative statement) below in ACL approvals issued since May of 2007:

> **'any future modifications to the ACL concentration values derived from modifications to information supplied in the IRIS, HEAST, ATSDR, and/or other EPA databases shall immediately be adopted as an ACL value meeting the requirements of 9 VAC 20-80-760.B.1.g without the need for Variance processing or public notice.'**

The Department's basis for allowing such automatic approvals for updated ACL use was as follows:

***A]** DEQ has already adopted the values determined via the REAMS program as deriving ACL data which is protective of human health and the environment, therefore, continued use of such REAMS–derived values should not continually require review each time an ACL value is revised.*

***B]** The language would not cover facilities wishing to update their ACL values based on independently-derived or calculated, site-specific risk data as that effort would require Department review.*

16] When do any ACL revisions become effective in the groundwater monitoring program at my facility?

9 VAC 20-81-250.A.6.e requires the owner/operator apply the most recently issued ACL values to each sampling event completed after issuance of the ACL revision. If there is a case where groundwater has been sampled prior to the ACL revision being released, and the analytical results are released after the ACL revision has been issued, the results of the sampling event can be compared to the ACL values in place at the time the sampling event was undertaken.

In those cases where the new ACL values would not trigger a GPS exceedance, even though the previous values would have, the exceedance shall be reported as normally required by the VSWMR and the Department will issue a response that further action addressing the exceedance shall not be required if the new ACL value is not exceeded in a future sampling event.

17] What happens when revised ACLs are issued and an ACL value is found to be higher than the Department approved background value currently used as GPS on site?

The VSWMR do not prohibit the use of an ACL in lieu of background as GPS, as long as the ACL is current and approved for use on site.

In those cases where an ACL value may be higher than natural site background, the Department prefers that a landfill owner/operator utilize site background for GPS comparison purposes until such time as a GPS exceedance is noted. This is because the site background value will typically show less year-to-year variation than an ACL value may. Because site background is a statistically calculated value, the sampling results may be compared directly when determining a possible SSI without the potential need to take three additional independent samples within the compliance period to determine whether an SSI has occurred (as could be the case with comparisons to an ACL which is not a statistically derived number).

If there is a case where an exceedance against an approved background value is recognized, the facility may simply apply the approved revised ACL as the GPS for the constituent in question for that sampling event (as long as the GPS table for the facility is updated accordingly as required under A.6.d or e).

18] What happens when revised ACLs are issued and an ACL value is found to be higher than the previously approved Department ACL and the site had exceedances of the previous lower ACL value?

The changes in ACL values cannot be backward applied to previous groundwater sampling results.

Going forward, if the higher ACL value is not exceeded, the constituent may no longer qualify as being a constituent of concern. For a GPS exceedance, the VSWMR require three straight years of non-exceeding sampling data before a constituent can be considered to have met its GPS. However, for those ACL changes of significant magnitude, such that the new values are well above the historical range of constituent sampling results, the Department may waive the three consecutive year sampling result requirement.

19] How are MCL-based GPS established?
See 20-81-250.A.6.b.(1)

The regulatory language does not require any Department pre-approval before MCLs can be used as GPS. Therefore, they are effective immediately and should be applied to the next regularly scheduled Assessment or Phase II sampling event.

20] How are background-based GPS established?
See 20-81-250.A.6.b.(2)

Background-based GPS may be established by simple letter approval after Department statistician review and comment on the facility's proposed values. The owner/operator is referred to EPA's 2009 'Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities – Unified Guidance' for information on the correct calculation (and periodic updates) of site background.

21] How are ACL-based GPS established?
See 20-81-250.A.6.b.(4).(a)

It is important to note that the performance requirements ACL values must meet are the same regardless of whether or not the values are derived from the default REAMS program or derived from facility-led calculation.

22] What info does a facility-calculated ACL value request need to include?

From an administrative standpoint, all the information described under 6.b.(4).(b). (i – iv).

23] Can the Director issue ACL values different from those requested by the Owner/Operator?
See 9 VAC 20-81-250.A.6.b.(5).(d)

Yes.

The Director may issue the concentration limit as requested by the Permittee, or issue a modified value based on the Department's review results.

24] Is there a cost with the submission of a facility-calculated ACL request?

With the promulgation of Amendment 7 to the VSWMR, there is no longer a Variance petition or processing fee associated with a request to use ACLs as GPS.

25] When do GPS become effective?

Upon completion of actions under A.6.b.(1), (2), (3) and (4 – if necessary).

It should be noted that MCL use as GPS is automatic and thus these values shall be used during the next regularly scheduled sampling event. There is no provision in the VSWMR for an owner/operator to 'wait' to compare monitoring results to GPS until all GPS for detected constituents (including background and ACLs) have been established for the landfill.

26] Can the Director review the applicability of the ACLs previously granted to a facility on a scheduled basis?

Yes.

The approved ACLs can be periodically reviewed by the Director under authority granted under A.6.b.(5).(c). However, this is rarely ever applied since ACL revisions are typically issued once a year based on changes in EPA data.

27] Can I expect to receive an updated GPS table from the Department each time an MCL, background-based, or ACL-derived GPS changes?

With the exception of the initial approval of site GPS which is accompanied by a Department issued GPS table, the VSWMR place the requirement to maintain an up-to-date GPS table on the owner/operator (A.6.d and e). Department revised GPS tables will not be automatically issued.