



# Tier 1 PCL Tables

## Overview of This Document

**Objectives:** This guide provides instruction in the correct interpretation and use of the Tier 1 PCL tables.

**Audience:** Regulated Community and Environmental Professionals

**References:** The Texas Risk Reduction Program (TRRP) rule, together with conforming changes to related rules, is contained in 30 TAC Chapter 350. The TRRP rule was initially published in the September 17, 1999 Texas Register (24 TexReg 7413-7944) and was amended in 2007 (effective March 19, 2007; 32 TexReg 1526-1579).

Find links for the TRRP rule and preamble, Tier 1 PCL tables, and other TRRP information at: [www.tceq.state.tx.us/remediation/trrp/](http://www.tceq.state.tx.us/remediation/trrp/).

TRRP guidance documents undergo periodic revision and are subject to change. Referenced TRRP guidance documents may be in development. Links to current versions are at: [www.tceq.state.tx.us/remediation/trrp/guidance.html](http://www.tceq.state.tx.us/remediation/trrp/guidance.html).

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## Introduction

The Texas Risk Reduction Program (TRRP) rule provides a three-tiered process for establishing human-health protective concentration levels (PCLs) for chemicals of concern (COCs). For convenience, tables of Tier 1 PCLs and risk-based exposure limits (RBELs) are provided on the TRRP web page for over 600 COCs for thirteen different exposure pathways and for both residential and commercial/industrial land uses. The Tier 1 PCL tables are provided by the TCEQ for informational purposes and so that TRRP users will not be required to perform the same calculations. This document is a guide to interpret and correctly use those tables. For information on the tiered process, PCL development and RBELs, see TCEQ guidance document *Tiered Development of Human Health PCLs* (RG-366/TRRP-22).

It is recommended that the Tier 1 PCL tables be at hand when reviewing this document so that the topic of discussion can be checked. The Tier 1 PCL tables can be downloaded as Excel spreadsheets from [www.tceq.state.tx.us/remediation/trrp/trrppcls.html](http://www.tceq.state.tx.us/remediation/trrp/trrppcls.html).

The Tier 1 PCL tables are intended for use after a COC release has been reported to the TCEQ program area and the program area has determined that action is needed under TRRP. Once the need for action under TRRP is determined, then the Tier 1 PCL tables can be used as a reference tool to:

- help establish assessment levels (see TCEQ guidance document *Affected Property Assessment Requirements* (RG-366/TRRP-12),
- determine levels of required performance of analytical methods (i.e., method quantitation limits) (see TCEQ guidance document *Selecting Target Chemicals of Concern* (RG-366/TRRP-10),
- identify those exposure pathways for a given COC where further action is warranted,
- identify the COC concentrations below which the TCEQ might not require action, and
- help determine the remedial strategies.

The Tier 1 PCL tables are updated yearly to reflect the addition of COCs or updates to toxicity factors. Therefore, the user is encouraged to periodically check the TRRP Web site or to register for the TRRP listserv to receive notices via electronic mail when the tables are updated.

## Overview of the Tier 1 PCL Tables

The Tier 1 PCL tables are organized as listed in Table A.

**Table A. Tier 1 PCL Tables and RBEL Tables**

Table No.	Table Title
1	Tier 1 Residential Soil PCLs
2	Tier 1 Commercial/Industrial Soil PCLs
3	Tier 1 Groundwater PCLs, Residential and Commercial/Industrial
4	Combined Tier 1 Soil PCLs, Residential
5	Combined Tier 1 Soil PCLs, Commercial/Industrial
6	Individual Tier 1 Soil PCLs, Residential
7	Individual Tier 1 Soil PCLs, Commercial/Industrial
8	Individual Tier 1 Groundwater PCLs, Residential and Commercial/Industrial
9	Individual RBELs, Residential
10	Individual RBELs, Commercial/Industrial

Although there are a total of ten tables, Tables 1 through 3 are the ones that most users will refer to most often since they provide Tier 1 soil and groundwater PCLs (e.g.,  $^{Tot}Soil_{Comb}$ ,  $^{GW}Soil_{Ing}$ , etc.) for residential and commercial/industrial land use. Many users will need to refer to only these first three tables to obtain necessary information. The remaining tables (Tables 4 through 10) will probably be needed more infrequently since the information they provide is the developmental basis for the PCLs provided in Tables 1 through 3. Figure 1 explains the multistep PCL development process represented by the ten tables.

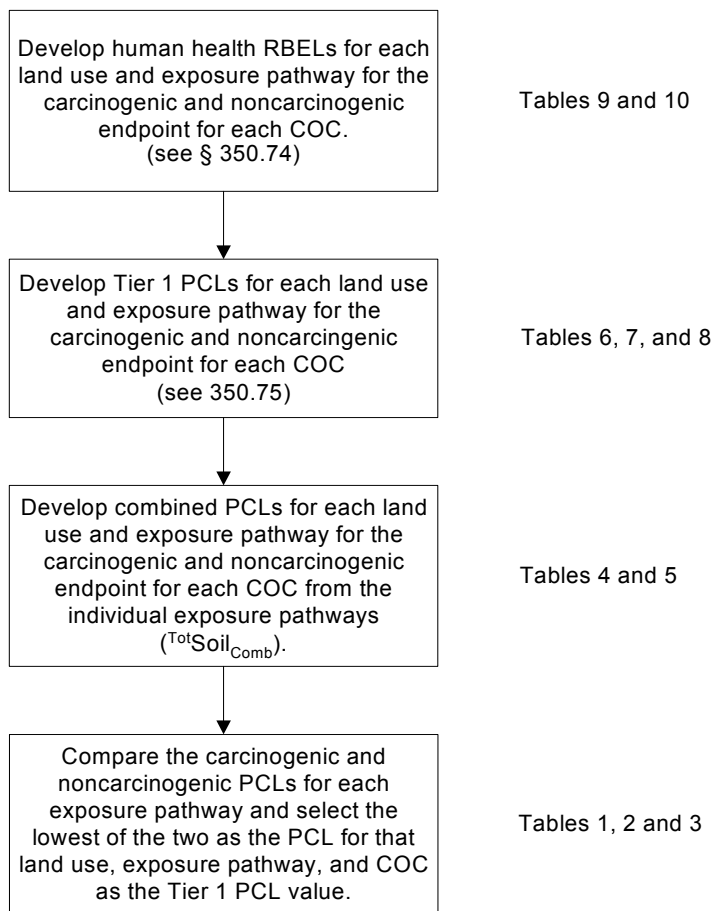
These PCL values will commonly be employed in completing an Affected Property Assessment Report.

### **Table structure**

Tier 1 PCL Tables 1 and 2 both provide soil PCLs and have the same structure. The only difference is that Table 1 is for residential land use and Table 2 is for commercial/industrial land use. The user is cautioned to note the table number and title when using a table to make sure the appropriate table is used. Tier 1 PCL Table 3 provides groundwater PCLs for both residential and commercial/industrial land uses.

In Tier 1 PCL Tables 1 and 2, the first column contains the listing of the COCs. The second column lists the chemical abstract system (CAS) number assigned to each COC. Because many COCs have various synonyms, the user is advised to check for the CAS number before concluding a COC is not included in the table. Following the first two columns, the balance of the table is subdivided into two sections: 0.5 acre source area and 30 acre source area. The meaning of these two source area size subdivisions is discussed later, but the user is cautioned to be certain that for each COC the appropriate subdivision of the table is being used. Next, within each of the source area size subdivisions, the PCLs are listed:  $^{Tot}Soil_{Comb}$ ,  $^{GW}Soil_{Ing}$ ,  $^{GW}Soil_{Class\ 3}$ ,  $^{Air}Soil_{Inh-V}$ ,  $^{Air}GW-Soil_{Inh-V}$ , and  $^{GW}Soil_{Secondary\ MCL}$ . Explanations of the PCL nomenclature, PCL definitions, and PCL applicability are provided in subsequent sections of this document. The numeric value for each soil PCL is listed for each COC in scientific notation, in units of milligrams of COC per kilogram of soil (mg/kg). Therefore, the PCLs for soil are presented as “parts per million” concentrations. Finally, to the right of each PCL column are note fields that provide information regarding each PCL value.

The first two columns of the Tier 1 Groundwater PCL Table (Table 3) are the same as that for the soils. However, the balance of the table is subdivided by land use type rather than source area size. The user needs to be certain to use the portion of the table that corresponds to the land use of the affected property or each portion of the affected property. Similar to the soil PCL tables, within the two land use subdivisions the PCLs are listed:  $^{GW}GW_{Ing}$ ,  $^{GW}GW_{Class\ 3}$ ,  $^{Air}GW_{Inh-V}$  0.5-acre source area, and  $^{Air}GW_{Inh-V}$  30 acre source area. The numeric value for each groundwater PCL is listed for each COC in scientific notation, in units of milligrams of COC per liter of water (mg/L). Therefore, the PCLs are presented as “parts per million” concentrations. Explanations of the PCL nomenclature, PCL definitions, and PCL applicability are provided in subsequent sections of this document. Finally, in the Tier 1 Groundwater PCL Table, there is a column that lists the federal secondary Maximum Contaminant Levels. The value listed in this column is to be used for  $^{GW}GW_{Ing}$  when it is a lower value than the  $^{GW}GW_{Ing}$  PCL value for that COC and when:



**Figure 1. Process used to develop the Tier 1 PCL table values.**

- the COCs are present in Class 1 groundwater,
- the COCs are in Class 2 groundwater and wells are threatened, or
- when the COCs are in Class 2 groundwater that is the only alternative for a water supply.

When the secondary Maximum Contaminant Level is used as the PCL, the soil PCL  $^{GW}Soil_{Secondary\ MCL}$  is used in lieu of  $^{GW}Soil_{Ing}$ .

Please note that many of the tables contain important footnotes that define various abbreviations used in the tables as well as instruct the user on the implementation of the table and refer the user to specific sections of the rule. All values presented in the Tier 1 lookup table have been rounded to two significant figures. Keep this rounding in mind when trying to duplicate the Tier 1 PCLs listed in the tables.

## PCL Nomenclature

The PCL nomenclature reflects the exposure medium, the source medium and the exposure route. The exposure medium appears first in superscript text, followed by the source medium in regular text and lastly the exposure route in subscript text. For example,  $^{GW}GW_{Ing}$  is a PCL where groundwater is the exposure medium ( $^{GW}$ ), groundwater is the source medium (GW), and ingestion is the exposure route ( $_{Ing}$ ). Cross-media transfer is indicated when exposure occurs in a different medium than the source medium. For example,  $^{Air}Soil_{Inh-V}$  is a PCL where air is the exposure medium ( $^{Air}$ ), soil is the source medium (Soil) and the route of exposure is inhalation of volatile emissions ( $_{Inh-V}$ ). The exposure pathways for the PCLs included in the Tier 1 PCL Tables 1 through 8 are listed in Table B.

**Table B. PCL Definitions and Applicable Environmental Medium**

PCL	Definition	Medium
$^{Tot}Soil_{Comb}$	Combined ingestion, dermal contact, inhalation of volatiles and particulates, and ingestion of aboveground and below-ground vegetables with COCs in soil ( $^{Soil}Soil_{Ing} + ^{Soil}Soil_{Derm} + ^{Air}Soil_{Inh-VP} + ^{Veg}Soil_{Ing}$ )	Surface soil
$^{Soil}Soil_{Ing}^1$	Ingestion of COCs in soil	
$^{Soil}Soil_{Derm}^1$	Dermal contact with COCs in soil	
$^{Air}Soil_{Inh-VP}^1$	Inhalation of volatile COCs and particulates with COCs from soil	
$^{Veg}Soil_{Ing}^{1,2}$	Ingestion of vegetables with COCs taken up from soil	
$^{Air}Soil_{Inh-V}$	Inhalation of volatile COCs from soil	Subsurface soil
$^{GW}Soil_{Ing}$ or $^{GW}Soil_{Secondary\ MCL}$	Soil-to-groundwater leaching of COCs to Class 1 and 2 groundwater	Surface and subsurface soil
$^{GW}Soil_{Class\ 3}$	Soil-to-groundwater leaching of COCs to Class 3 groundwater	
$^{Air}GW-Soil_{Inh-V}$	Soil-to-groundwater leaching for groundwater volatilization	
$^{GW}GW_{Ing}$	Ingestion of COCs in Class 1 or 2 groundwater	Groundwater
$^{GW}GW_{Class\ 3}$	COCs in Class 3 groundwater	
$^{Air}GW_{Inh-V}$	Inhalation of volatile COCs from Class 1, 2 or 3 groundwater	
Other <sup>3</sup>	Other complete or reasonably anticipated to be completed exposure pathways	All environmental media

1 These PCLs are never applied individually. They are always combined and applied as  $^{Tot}Soil_{Comb}$ .

2 For residential land use only.

3 Not in the tables, but included here as a reminder that other pathways need to be considered (§350.71(c)).

## RBEL Nomenclature

Tables 9 and 10 are actually RBELs for residential and commercial/industrial properties, respectively. A RBEL is fully defined in §350.4(a)(77), but to summarize, it is the human health protective concentration that is applied at the point of exposure. PCLs are calculated

from RBELs (Figure 1). The RBELs are provided for reference. The RBELs are based on a nomenclature that is similar to the one used for PCLs. For the RBELs, the exposure medium appears first in superscript text, followed by RBEL in regular text and lastly the exposure route in subscript text. For example,  $^{Soil}RBEL_{Ing}$  is a RBEL where soil ( $^{Soil}$ ) is the exposure medium and ingestion ( $_{Ing}$ ) is the exposure route. The RBELs included in the tables are listed in Table C.

**Table C. RBEL Definitions**

RBEL	Definition
$^{Air}RBEL_{Inh}$	Air inhalation
$^{Soil}RBEL_{Derm}$	Dermal contact with soil
$^{Soil}RBEL_{Ing}$	Ingestion of soil
$^{GW}RBEL_{Ing}$	Ingestion of groundwater
$^{GW}RBEL_{Class\ 3}$	Class 3 groundwater
$^{AbgVeg}RBEL_{Ing}$	Ingestion of aboveground vegetables
$^{BgVeg}RBEL_{Ing}$	Ingestion of below-ground vegetables

## Using the Tier 1 PCL tables

To correctly use the Tier 1 PCL tables, a person must know three things:

- the land use (residential or commercial/industrial),
- the environmental media affected by the COC and the associated exposure pathways, and
- the size of the source area for each COC.

### Land use

Generally, the PCL values are different depending on whether the affected property is residential or commercial/industrial land use. Residential land use may be applicable within a particular portion of an affected property, while commercial/industrial land use may be applicable within a different portion of the same affected property. For further information on land use classification, see §350.53 and TCEQ guidance document *Land Use Classification* (RG-366/TRRP-7). If the land use is uncertain, assume residential land use.

There is one particular point that should be noted with regard to land use classification. For  $^{GW}GW_{Ing}$ ,  $^{GW}GW_{Class\ 3}$  and their associated soil-to-groundwater PCLs, land use is not a factor when there is a federal Maximum Contaminant Level (or action level in the case of copper and lead) promulgated for the COC. In that instance, the PCLs are the same for these exposure pathways for both residential and commercial/industrial land use.

## **Environmental media and exposure pathways**

TRRP assigns exposure pathways and PCLs to the different environmental media (§350.71(c)). Table B lists those assignments. Different PCLs are applicable for the different environmental media. Additionally, more than one PCL is applicable for any particular environmental medium. To properly use the Tier 1 PCL tables, the person needs to know which environmental media are affected and the classification of the upper-most groundwater-bearing unit. Surface soils are defined to extend from ground surface to 15 feet below ground surface at residential property and from ground surface to 5 feet below ground surface at commercial/industrial property. For the complete definitions of surface and subsurface soils and the different classes of groundwater, see TCEQ guidance documents *Human Health Points of Exposure* (RG-366/TRRP-21) and *Groundwater Classification* (RG-366/TRRP-8), respectively. Groundwater classification is addressed in the rule in §350.52. If it is uncertain whether or not surface soil or subsurface soil is affected, assume surface soil is affected. If the classification of the groundwater is uncertain, assume Class 1 groundwater. The person should then use Table B to determine which PCLs are applicable for the given environmental medium and then choose the lowest PCL value of the applicable PCLs.

For example, if residential surface soil is affected with benzene and the underlying groundwater is Class 1, then at a minimum  $^{Tot}Soil_{Comb}$  and  $^{GW}Soil_{Ing}$  (there is no  $^{GW}Soil_{Secondary\ MCL}$  for benzene) are applicable (Table B). The lower of the two PCL values is the human health PCL that is to be applied.

## **Source area size**

Source area is important for only those exposure pathways where the source area and the exposure point are not in the same environmental medium. For example, with AirSoilInh-V, the source area is in subsurface soil, but the exposure pathway is volatilization of COCs from the subsurface soil into the air and subsequent inhalation of those vapors. Therefore, the point of exposure is in air. For such exposure pathways, a COC transport mechanism, referred to in TRRP as a natural attenuation factor (NAF), is involved to transport the COC from the source medium to the point of exposure. All else being equal, the larger the source area, the less the PCL value because more COC mass will be delivered to the point of exposure. Therefore, the size of the source area must be considered.

For Tier 1, two source area sizes are assumed, 0.5 acre or 30 acre. Use the 0.5 acre source area PCL when the source area for a COC is equal to or less than 0.5 acres in surface area. Use the 30 acre source area PCL when the source area for that COC is greater than 0.5 acres in surface area and less than or equal to 30 acres in surface area. If the source area for a COC is greater than 30 acres, use of Tier 1 PCLs is not appropriate for assessment or remediation, and the person must proceed to Tier 2 or 3 (see TCEQ guidance document *Tiered Development of Human Health PCLs*

(RG-366/TRRP-22) for further information on the tiered PCL development process). At the same affected property, PCLs may be based on 0.5 acre sources for some COCs and 30 acre sources for others.

The term source area is defined in §350.4(a)(83), but for Tier 1, it is the area of COCs in soil or groundwater in excess of the assessment level applicable for the given land use (§350.71(b)(2)). The assessment level is the lower of the Tier 1 human health PCL (i.e.,  $^{Tot}Soil_{Comb}$ ,  $^{Air}Soil_{Inh-V}$ ,  $^{GW}GW_{Ing}$ ,  $^{GW}GW_{Class\ 3}$ ,  $^{Air}GW_{Inh-V}$  as applicable) and the Tier 1, 2 or 3 soil-to-groundwater PCL (i.e.,  $^{GW}Soil_{Ing}$ ,  $^{GW}Soil_{Secondary\ MCL}$ ,  $^{GW}Soil_{Class\ 3}$ ) for each COC. For more information on assessment levels see TCEQ guidance document *Affected Property Assessment Requirements* (RG-366/TRRP-12). When the source area size is unknown, or to lessen the potential to have to remobilize for additional assessment to define the extent of COCs in excess of the assessment level, use the 30 acre PCL.

## Precautions in use of Tier 1 PCL tables

The Tier 1 PCL tables are not intended for use as references for release reporting. In other words, the Tier 1 PCLs are not threshold COC concentration levels to be used to determine whether a release has to be reported to the TCEQ. Instead, requirements for reporting releases are established by the individual program areas and not TRRP. However, the Tier 1 PCLs tables can be used for planning purposes to benchmark the actions that may be required in the event a release of COCs is reported to the TCEQ.

Table D on page 9 lists other precautions when using the Tier 1 PCL tables. The values from the Tier 1 PCL tables should **not** be used without further evaluation when any of the situations listed in Table D apply.

## Example application of the Tier 1 PCL tables

These exercises will help you become oriented and familiar with the use of the Tier 1 PCL tables. For the answers, see page 10.

1. What PCLs are applicable to subsurface soils?
2. The soil source area for toluene is 1.32 acres in surface area. What is the Tier 1 commercial/industrial  $^{GW}Soil_{Ing}$  PCL? Does the land use make a difference? Why or why not?
3. What is the critical Tier 1 residential surface soil PCL for lead?
4. Does the size of the source area make a difference for  $^{Tot}Soil_{Comb}$  PCL for benzo-a-pyrene? Why or why not?
5. A Class 1 groundwater has been affected by MTBE. What is the value of the residential  $^{GW}GW_{Ing}$  PCL?
6. At an affected property located in a rural undeveloped area, chromium is present in the upper 6 inches of soil, but the Tier 1 surface soil PCLs are not exceeded. Is further action required?



**Table D. Other Factors Influencing Use of the Tier 1 PCL Tables**

Factor	Impact
<b>Cumulative evaluation</b>	As discussed in §350.72, when there are more than 10 carcinogenic COCs and/or 10 noncarcinogenic COCs detected in a single medium, the impact of multiple COCs needs to be addressed and individual PCL(s) need to be lowered to meet the cumulative risk level and/or hazard index. Note that the cumulative adjustment needs to be performed on a pathway-specific basis (i.e., the cumulative risk and hazard levels need to be met for <sup>Tot</sup> Soil <sub>Comb</sub> and <sup>GW</sup> Soil <sub>Ing</sub> before critical PCLs are chosen). Tables 4–10 can be used to determine if a COC exhibits carcinogenic or noncarcinogenic health effects, or both. Please be aware that in Tables 6 and 7, the carcinogenic-based PCLs are presented first, then the noncarcinogenic PCLs are presented later in the table. For COCs that cause both carcinogenic and noncarcinogenic effects, both endpoints will need to be considered when verifying that the cumulative target risk level ( $1 \times 10^{-4}$ ) and cumulative hazard index (10) are not exceeded. Individual and combined PCLs (i.e., combined across relevant pathways, $\text{TotSoil}_{\text{Comb}} = \text{TotSoil}_{\text{Ing}} + \text{Derm} + \text{Inh} + \text{Veg}$ ) for both carcinogenic and noncarcinogenic endpoints for all COCs as applicable are provided in Tables 6 through 8 for all standard exposure pathways. The cumulative risk level and cumulative hazard index must not be exceeded under a Tier 1, 2, or 3 evaluation. See TCEQ guidance document <i>Risk Levels, Hazard Indices, and Cumulative Adjustments</i> (RG-366/TRRP-18) for further information on cumulative checks.
<b>Other exposure pathways</b>	The Tier 1 PCLs address only a minimum set of exposure pathways that may be complete or reasonably anticipated to be completed at an affected property. As discussed in §350.71(c)(8), there may be other complete or reasonably anticipated to be completed exposure pathways that must be evaluated on a site-specific basis (e.g., surface water, sediment, beef uptake and subsequent human consumption, etc.).
<b>Aesthetics</b>	As discussed in §350.74(i), if the RBEL or PCL concentration for a COC otherwise adversely impacts environmental quality or public welfare and safety, presents objectionable characteristics (e.g., taste, odor), or makes a natural resource unfit for use, the person shall comply with the aesthetics criteria listed in §350.74(i)(1)–(3).
<b>Ecological concerns</b>	As discussed in §350.71(a), the Tier 1 PCL tables include human health PCLs only; ecological risk must be addressed separately. A determination must be made as to whether the Tier 1 PCL for each COC must be downwardly adjusted to ensure protection of ecological receptors as described in §350.77. The first step is to complete a Tier 1 Exclusion Criteria Checklist. If the affected property is not excluded, then the Tier 1 human health PCLs cannot be confidently used until the determination is made that ecological PCLs must be developed and that the ecological PCLs are higher than the human health PCLs.
<b>Surface water and sediment</b>	The Tier 1 PCLs discussed in this document apply to soil and groundwater only. For Tier 1 Contact Recreation Surface Water PCLs and Tier 1 Direct Human Contact Sediment PCLs, see TCEQ guidance document <i>Determining PCLs for Surface Water and Sediment</i> (RG-366/TRRP-24).
<b>Background Concentrations and Method Quantitation Limits</b>	If the Tier 1 PCLs are less than background concentrations or less than the method quantitation limit, then the higher of the background concentration or the MQL becomes the PCL (§350.78(c)). Figure: 30 TAC §350.51(m) lists Texas-specific soil background concentrations for 22 metals that may be used in lieu of site-specifically determined background concentrations. The Texas-specific background concentrations have not been included in the Tier 1 PCL tables.
<b>Source area &gt; 30 acres</b>	If the source area for a COC is greater than 30 acres, Tier 1 PCLs may not be used for those pathways where source area size is pertinent. In such a case, the Tier 1 PCLs may not be adequately protective. (§350.71(b)(1))
<b>Total Petroleum Hydrocarbons</b>	PCLs are listed at the end of the Tier 1 PCL tables for individual aromatic and aliphatic boiling point ranges and for transformer mineral oil TPH. For a complete explanation for how to use these PCLs, please see TCEQ guidance document <i>Development of Human Health PCLs for Total Petroleum Hydrocarbon Mixtures</i> (RG-366/TRRP-27).

## Answers:

1. From Table B of the guidance,  $^{Air}Soil_{Inh-v}$ , and  $^{GW}Soil_{Ing}$  or  $^{GW}Soil_{Secondary\ MCL}$ , or  $^{GW}Soil_{Class\ 3}$  as appropriate for the class of the underlying groundwater, and  $^{Air}GW-Soil_{Inh-v}$ . The exercise is focused on Tier 1, but to give a comprehensive answer, PCLs for any other complete or reasonably anticipated to be completed exposure pathway are also applicable, but they are not Tier 1 PCLs.
2. The commercial/industrial  $^{GW}Soil_{Ing}$  should be based on the 30 acre source area since the reported 1.32 acre source area exceeds the 0.5 acre source area and is less than 30 acres. From Tier 1 PCL Table 2, the value is 4.1 mg/kg. No, land use does not impact this PCL for toluene because the  $^{GW}Soil_{Ing}$  is based on the federal Maximum Contaminant Level for toluene of 1 mg/L (see Tier 1 PCL Table 3 for  $^{GW}GW_{Ing}$ ). The federal Maximum Contaminant Level is the same for both residential and commercial/industrial land uses.
3. The critical Tier 1 surface soil PCL for lead is 15 mg/kg. This is based on comparison of  $^{Tot}Soil_{Comb}$ ,  $^{GW}Soil_{Ing}$ ,  $^{Air}GW-Soil_{Inh-v}$  in Tier 1 PCL Table 1 and the Texas-specific background concentration for metals presented in Figure: 30 TAC §350.51(m) of the TRRP rule. Where a PCL is below a background concentration, background can be substituted for that PCL. Because a source area was not specified, the 30 acre-source area was assumed.
4. No, the size of the source area does not make a difference. The reason for this is that the inhalation exposure pathway is not the most critical exposure pathway for benzo-a-pyrene. As indicated in Tier 1 PCL Tables 6 and 7, the  $^{Soil}Soil_{Ing}$  PCL is three orders of magnitude lower than the  $^{Air}Soil_{Inh-v}$  PCL. Therefore, the  $^{Tot}Soil_{Comb}$  PCL for benzo-a-pyrene is controlled by ingestion and not inhalation. Further, only the  $^{Air}Soil_{Inh-v}$  PCL requires COC transport for exposure to occur. Because the  $^{Soil}Soil_{Ing}$  PCL does not factor in COC transport, the size of the source area has no bearing on the  $^{Soil}Soil_{Ing}$  PCL value. Such considerations can help during formulation of remedial strategies.
5. Given that this is a Class 1 groundwater, the residential  $^{GW}GW_{Ing}$  PCL value is 0.015 mg/L. Because this is a Class 1 groundwater, §350.74(f)(3)(A) requires the use of the federal secondary Maximum Contaminant Level or other criteria to address objectionable taste and odor characteristics when those levels are lower than  $^{GW}GW_{Ing}$ . Therefore, the PCL was pulled from the Secondary MCL column of Tier 1 PCL Table 3. The TCEQ has established 0.015 mg/L as the odor and taste threshold criterion for MTBE.
6. With regard to human health matters, further action may not be warranted. However, for all affected properties proceeding under TRRP, a Tier 1 Exclusion Criteria Checklist must be completed to determine if ecological risks are of potential concern. Given the shallow depth of the chromium and the fact that the affected property is located in a rural undeveloped area, it is possible that the affected property would not be excluded for further analysis for ecological considerations. If such is the case, then further action is warranted. Further action may not be warranted if the affected property passes the exclusion criteria checklist.