Revised Backup Material for August 14, 2024 Agenda

Texas Commission on Environmental Quality
Interoffice Memorandum

To: Commissioners **Date:** August 7, 2024

Thru: Laurie Gharis, Chief Clerk
Kelly Keel, Executive Director

From: Beth Seaton, Director
Office of Waste, Director

Subject: Docket No. 2024-0837-RUL / Rule Project No. 2024-023-350-WS
Commission Approval for Proposed Rulemaking
Chapter 350, Texas Risk Reduction Program
Staff-Recommended Updates to Protective Concentration Level Approaches for Dioxins/Furans and Dioxin-like Polychlorinated Biphenyls
Highlighted and Strikethrough Version of Documents

The attached revised backup package for the Proposed Rulemaking Chapter 350, Texas Risk Reduction Program, Rule Project Number 2024-023-350-WS, removes references in the proposed rule directing persons to use guidance to determine the list of constituents considered to be dioxins/furans and dioxin-like polychlorinated biphenyls and their corresponding toxicity equivalency factors. The revised backup package directs persons to determine the constituents considered to be dioxins, furans, and dioxin-like polychlorinated biphenyls from the list established by the World Health Organization in 2005. The revised backup package also direct persons to use the toxicity equivalency factors established by the World Health Organization in 2005, or more recent toxicity equivalency factors established by a scientifically valid source that have been reviewed and approved by the executive director, when determining a 2,3,7,8- tetrachlorodibenzodioxin toxicity equivalency quotient. The revised backup package also corrects a minor typographical error in the rule and adjusts the dates for the rulemaking timeline. The corrections are indicated in strikethrough and highlighted text in the attached agenda item request, executive summary, plain language summary, proposal preamble, and hearing notice.

Original backup materials for this rulemaking project were filed on July 12, 2024.

Attachments:
Agenda Item Request
Executive Summary
Plain Language Summary
Proposal Preamble
Hearing Notice

cc: Chief Clerk, 7 copies

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

AGENDA ITEM REQUEST

for Proposed Rulemaking

AGENDA REQUESTED: ~~July 31~~ August 14, 2024

DATE OF REQUEST: ~~July 12~~ August 7, 2024

INDIVIDUAL TO CONTACT REGARDING CHANGES TO THIS REQUEST, IF NEEDED: Gwen Ricco, Rule/Agenda Coordinator, (512) 239-2678

CAPTION: Docket No. 2024-0837-RUL. Consideration for publication of, and hearing on, proposed amendment to 30 TAC Chapter 350, Texas Risk Reduction Program (TRRP) rule, Subchapter D, Development of Protective Concentration Levels, Section 350.76, Approaches for Specific Chemicals of Concern to Determine Human Health Protective Concentration Levels.

The proposed rulemaking would update the chemical-specific approaches used for developing and demonstrating attainment of the critical human health protective concentration levels (PCLs) for dioxins/furans and dioxin-like polychlorinated biphenyls (PCBs) contained in Section 350.76. (Scott Settemeyer, Michael Martinez; Rule Project No. 2024-023-350-WS)

Beth Seaton
Director

Merrie Smith
Division Deputy Director

Gwen Ricco
Agenda Coordinator

Copy to CCC Secretary? X NO YES

Texas Commission on Environmental Quality
Interoffice Memorandum

To: Commissioners **Date:** ~~July 12, 2024~~August 7, 2024

Thru: Laurie Gharis, Chief Clerk
Kelly Keel, Executive Director

From: Beth Seaton, Director
Office of Waste

Docket No.: 2024-0837-RUL

Subject: Commission Approval for Proposed Rulemaking
Chapter 350, Texas Risk Reduction Program
Staff-Recommended Updates to Protective Concentration Level Approaches for Dioxins/Furans and Dioxin-like Polychlorinated Biphenyls
Rule Project No. 2024-023-350-WS

Background and reason(s) for the rulemaking:

The Remediation Division proposes to amend 30 Texas Administrative Code (TAC) Chapter 350, Texas Risk Reduction Program (TRRP) rule §350.76, to update the chemical-specific approaches used for developing and demonstrating attainment of the critical human health protective concentration levels (PCLs) for dioxins/furans[1] and dioxin-like polychlorinated biphenyls (PCBs).

The dioxin/furan and dioxin-like PCB soil PCLs used for residential and commercial/industrial land use under TRRP, which are specified in the TRRP rule at §350.76(e)(3), need to be updated. The PCLs in the TRRP rule were based on a 1998 Environmental Protection Agency (EPA) policy memo (OSWER Directive 9200.4-26), which described an approach for addressing dioxin in soil. In 2012, EPA completed a reassessment of this approach and derived an updated reference dose for dioxin. At the time, TCEQ was concerned about EPA's updated reference dose. However, more recent evaluations now support the use of a reference dose in the range of the 2012 EPA value.

An additional consideration is that dioxins/furans and dioxin-like PCBs are mixtures of chemical compounds (congeners) with different toxicities. Section 350.76 of the TRRP rule uses toxicity equivalency factors (TEFs) to assess the relative toxicity of the individual congeners within a mixture of dioxins/furans and dioxin-like PCBs. The TEFs are applied to each measured congener and are summed to derive a total toxicity equivalency quotient (TEQ) to compare to a 2,3,7,8-tetrachlorodibenzodioxin (the most toxic congener) PCL. The TRRP rule provides specific TEFs for various dioxin/furan and dioxin-like PCB compounds and directs persons to use these TEF values when demonstrating attainment of the critical PCL.

When the TRRP rule was promulgated in 1999, the most recent TEF values established by the World Health Organization (WHO) in 1998 were listed in the rule. However, as science has evolved and more data has become available, WHO has updated the TEF values. EPA and other regulatory agencies have been using the 2005 WHO TEFs.

Therefore, the TRRP chemical-specific PCL approaches for dioxins/furans and dioxin-like PCBs need to be revised to reflect updated information on dioxin toxicity and address appropriate updates to the WHO TEFs for dioxins/furans and dioxin-like PCBs. Updating the rule would also provide TCEQ with the flexibility needed to evaluate the scientific defensibility, adoption, and use of ~~alternative~~ more recent TEFs that have been derived after the TRRP rule was published in 1999.

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[1] The TRRP rule uses the term "Polychlorinated Dibenzo-p-Dioxins and Dibenzofurans". This interoffice memorandum refers to these compounds as "dioxins/furans."

Scope of the rulemaking:

The rulemaking would amend the chemical-specific approaches under §350.76(d) for dioxin-like PCBs and §350.76(e) for dioxins/furans and remove the figure in §350.76(d)(2)(B) containing TEFs for dioxins/furans and dioxin-like PCBs (referred to in the figure collectively as "Dioxin-Like Compounds"). Additionally, instead of specifying new TEFs in TRRP, the rulemaking would direct persons to determine the constituents considered to be dioxins, furans, and dioxin-like PCBs from the list established by WHO in 2005. The rulemaking would also direct persons to use the ~~most current final WHO~~ TEFs established by WHO in 2005, or more recent TEFs established by a scientifically valid source that have been reviewed and approved by the executive director, ~~that have been approved by TCEQ~~ when determining a 2,3,7,8-TCDD TEQ. This would allow TCEQ and regulated entities to use more up-to-date values and retain flexibility in the TEFs to adapt to updated science in the future. ~~The rulemaking would also include language that directs persons to use a TEF from any different source TCEQ determines to be most scientifically valid, an approach like that provided in §350.73(a)(7).~~

The rulemaking would also remove the residential and commercial/industrial dioxin/furan and dioxin-like PCB soil PCLs listed in §350.76(e)(3) and instead require PCLs for a 2,3,7,8-TCDD TEQ to be calculated according to the equations and rule provisions provided in §350.75.

A.) Summary of what the rulemaking would do:
The rulemaking would amend 30 Texas Administrative Code (TAC) Chapter 350, Texas Risk Reduction Program (TRRP) rule §350.76, to update the chemical-specific approaches used for developing and demonstrating attainment of the critical human health protective concentration levels (PCLs) for dioxins/furans[2] and dioxin-like polychlorinated biphenyls (PCBs).

B.) Scope required by federal regulations or state statutes:
The rulemaking is not required by federal regulations or state statute; rather it revises the PCL approaches used for dioxins/furans and dioxin-like PCBs based on updated toxicity information.

C.) Additional staff recommendations that are not required by federal rule or state statute:
Staff outlined all recommended changes above and do not propose further recommendations at this time.

Statutory authority:

- Texas Water Code (TWC), §5.102, which establishes the commission's general powers;
- TWC, §§5.103 and 5.105, which authorize the commission to adopt rules and policies necessary to carry out its powers and duties;
- TWC, §26.011, which authorizes the commission to administer the provisions of TWC, Chapter 26;
- TWC, §26.039, which states that activities which are inherently or potentially capable of causing or resulting in the spillage or accidental discharge of waste or other substances and which pose serious or significant threats of pollution are subject to reasonable rules establishing safety and preventative measures which the commission may adopt or issue;

[2] The TRRP rule uses the term "Polychlorinated Dibenzo-p-Dioxins and Dibenzofurans". This interoffice memorandum refers to these compounds as "dioxins/furans."

- TWC, §26.121, which prohibits persons from discharging wastes into or adjacent to any water in the state unless authorized to do so and prohibits persons from engaging in any other activity which causes pollution of any water in the state;
- TWC, §§26.262 and 26.264, which state it is the policy of this state to prevent the spill or discharge of hazardous substances into the waters in the state and authorizes the commission to issue rules to carry out the policy;
- TWC, §§26.341 and 26.345, which state it is the policy of this state to maintain and protect quality of groundwater and surface water resources from pollution from certain substances in underground and above-ground storage tanks and authorizes the commission to adopt rules to carry out the policy;
- TWC, §26.401, which states that it is the policy of this state that discharges of pollutants, disposal of wastes, or other activities subject to state regulation be conducted in a manner to maintain and not impair groundwater uses or pose a public health hazard, and that groundwater quality be restored if feasible;
- Texas Health & Safety Code (THSC), §§361.017 and 361.024, which establish the commission's jurisdiction over all aspects of the management of industrial solid waste and hazardous municipal waste with all power necessary or convenient to carry out the responsibilities of that jurisdiction and authorizes the commission to adopt rules; and
- THSC, Chapter 361, Subchapter F, which authorizes the commission to identify, assess, and remediate facilities that may constitute an imminent and substantial endangerment to public health and safety or the environment due to a release or threatened release of hazardous substances into the environment.

Effect on the:

A.) Regulated community:
The rulemaking will result in lower assessment and cleanup levels for regulated entities addressing dioxins/furans and dioxin-like PCBs currently and in the future, which could require the expenditure of additional time and costs to possibly implement an unplanned or more extensive remedy. However, the agency estimates that a comparatively small universe of sites will be impacted (i.e., fewer than 25 sites, mostly confined to the wood treating sector). In addition, it is possible that closed sites would need to be revisited if the lower PCL was deemed a substantial change in circumstance, or if an actual exposure to concentrations above the new PCLs needed to be addressed. While it is difficult to accurately estimate the additional costs that could be incurred, staff anticipate that these costs could vary depending on the extent of the contamination at a particular site and the selected or implemented remedy.

B.) Public:
The rulemaking will result in updated human health PCLs for dioxins/furans and dioxin-like PCBs and will allow TCEQ the flexibility to adapt to the latest science.

C.) Agency programs:
Some remediation programs, such as the Voluntary Cleanup, Corrective Action, and Superfund may require regulated entities to perform additional work to address releases of dioxins/furans and dioxin-like PCBs. Additionally, the costs for assessing and remediating impacted state-funded Superfund sites may increase. However, since the rulemaking would only affect a small number of state-funded Superfund sites, the program anticipates it would be able to absorb these additional costs within the existing budget.

Stakeholder meetings:

Re: Docket No. 2024-0837-RUL

A public hearing will be held on Monday, September ~~16~~30, 2024 during the public comment period (August ~~16~~30, 2024 ~~– September 17~~– October 1, 2024).

Public Involvement Plan

Yes. In addition to the statutory public notice requirements, TCEQ will develop a public involvement plan to encourage public participation. A plain language summary will also be provided.

Alternative Language Requirements

Yes. Notices will be provided in Spanish for this rulemaking. Persons planning to attend the public hearing may request translation services as needed.

Potential controversial concerns and legislative interest:

Amending the chemical-specific PCL approaches for dioxins/furans and dioxin-like PCBs in rule will result in lower PCLs for these chemicals, which could compel additional delineation and remediation requirements at sites affected by these chemicals. This could affect persons currently addressing these chemicals at remediation sites, potentially requiring unplanned expenditures of additional time, costs, and resources.

The TRRP rule requires persons to conduct additional assessment and remediation at sites where "…changes [in toxicity data] are of such magnitude to present an unacceptable threat to human health or the environment when the site is evaluated for future exposure conditions based on property-specific considerations" [30 TAC §350.35(e)]. Therefore, there may be concerns from regulated entities that have already completed approved response actions involving dioxins/furans or dioxin-like PCBs. As the agency becomes aware of these sites, there may be the need to re-evaluate them on a case-by-case basis.

Would this rulemaking affect any current policies or require development of new policies?
There are currently no policies or regulatory guidance regarding developing and demonstrating attainment of the critical PCLs for dioxins/furans and dioxin-like PCBs. However, with this rulemaking, it is anticipated that guidance will be ~~needed~~developed to provide ~~clarification~~ assistance to the regulated community on implementing the rule~~which dioxins/furans and dioxin-like PCB congeners should be used to derive a 2,3,7,8-TCDD TEQ, the approved source(s) of TEFs, and for determining whether a response action is required~~.

What are the consequences if this rulemaking does not go forward? Are there alternatives to rulemaking?

Without this rule change, the TCEQ must continue to use the outdated 1998 TEFs. The existing framework of the rule provides chemical-specific PCL approaches for dioxins/furans and dioxin-like PCBs, and they could continue being addressed as they have been for the past 25 years. However, based on updated science, the cleanup levels for dioxins/furans and dioxin-like PCBs in soil should be lower than the PCLs currently used by TCEQ.

An alternative would be to adopt the 2005 WHO TEFs to replace the outdated TEFs in TRRP (WHO 1998). The agency could also adopt soil PCLs directly as published by EPA in their regional screening levels (RSLs) tables, using the TCEQ specific risk and hazard values. This would make it clear what PCLs and TEFs would apply for regulated entities, but would leave TCEQ with little to no flexibility in choosing appropriate updated toxicity factors, PCLs or TEFs.

Re: Docket No. 2024-0837-RUL

Key points in the proposal rulemaking schedule:

Anticipated proposal date: ~~July 31~~August 14, 2024
Anticipated *Texas Register* publication date: August ~~16~~30, 2024
Anticipated public hearing date: September ~~16~~30, 2024
Anticipated public comment period: August ~~16~~30, 2024 ~~– September 17~~– October 1, 2024
Anticipated adoption date: ~~December 18, 2024~~January 2025

Agency contacts:
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Texas Commission on Environmental Quality (TCEQ)
May 9, 2024

Plain Language Summary of Proposed Rules for Updating the Texas Risk Reduction Program (TRRP) Rules

Introduction

The proposed rule revision would modify 30 Texas Administrative Code (TAC) Chapter 350, Texas Risk Reduction Program (TRRP) rule §350.76. The first part of the proposed revision will update the critical human health protective concentration levels (PCLs) for polychlorinated dibenzo-p-dioxins and dibenzofurans ("dioxins/furans") and dioxin-like polychlorinated biphenyls (PCBs). These PCLs represent safe levels for chemicals in soil and serve as the cleanup levels for sites entered in Remediation Division programs under TRRP. The current values in TRRP are now considered outdated in light of the most recent scientific data. More recent evaluations support the use of a newer reference dose; therefore, the TCEQ proposes to amend TRRP §350.76 to remove the outdated policy values and update dioxin/furan and dioxin-like PCB calculations for soil PCLs used for residential and commercial/industrial land use.

Additionally, TRRP §350.76 provides specific toxicity equivalency factors (TEFs) for dioxin/furan and dioxin-like PCB compounds to be used when demonstrating attainment of the critical PCL. The proposed rule revision would remove the TEFs based on the 1998 World Health Organization values from the TRRP rule and direct persons to use ~~bring the~~ updated TEFs that are in line with current accepted science.

Summary of Proposed Rule Amendment

The proposed rulemaking (Project No. 2024-023-350-WS) would amend 30 TAC §350.76 to update the chemical-specific approaches used for developing and demonstrating attainment of the critical human health PCLs for dioxins/furans and dioxin-like PCBs.

Public Comment and Hearing Information

The commission will offer a hybrid in-person and virtual public hearing on the proposed rules. The hearing will be held in Austin on Monday, September ~~16~~30, 2024, at 9:00 a.m. in Building F, Room 2210, at the commission's central office located at 12100 Park 35 Circle. Individuals who plan to attend the hearing virtually and want to provide oral comments must register by Thursday, September ~~12~~26, 2024. To register, please email Rules@tceq.texas.gov and provide the following information: your name, your affiliation, your email address, your phone number, and whether or not you plan to provide oral comments during the hearing. Instructions for participating in the hearing will be sent on Friday, September ~~13~~27, 2024, to those who register for the hearing.

Members of the public who do not wish to provide oral comments but would like to view the hearing virtually may do so at no cost at:

https://teams.microsoft.com/l/meetup-join/19%3ameeting_MzY3YmVhNjItZWIxOS00OWEyLWI5ZTgtZjYyY2NhNzcwNjg1%40thread.v2/0?context=%7b%22Tid%22%3a%22871a83a4-a1ce-4b7a-8156-3bcd93a08fba%22%2c%22Oid%22%3a%22e74a40ea-69d4-469d-a8ef-06f2c9ac2a80%22%7d

The purpose of the hearing will be to receive public comments on the TRRP § 350.76 rulemaking proposal (Project No. 2024-023-350-WS). The hearing will be conducted in English. Language interpretation services may be requested. For accommodation needs, contact Sandy Wong, Office of Legal Services at (512) 239-1802 or 1-800-RELAY-TX (TDD) as far in advance as possible.

The comment period for these proposed actions opens on August ~~16~~30, 2024, and closes at 11:59 p.m. on ~~September 17~~October 1, 2024. Submit written comments through the TCEQ Public Comments system at *https://tceq.commentinput.com/comment/search*. Comments must reference Rule Project Number **2024-023-350-WS**.

Copies of the proposed rules can be found on the TCEQ's website at *https://www.tceq.texas.gov/rules/propose_adopt.html*.

For more information about the proposals or to get help with submitting written comments, contact Scott Settemeyer, Rule Project Manager, (512) 239-2439 or scott.settemeyer@tceq.texas.gov.

The Texas Commission on Environmental Quality (TCEQ, agency, or commission) proposes amendments to §350.76.

Background and Summary of the Factual Basis for the Proposed Rules

The purpose of this rulemaking is to amend 30 Texas Administrative Code (TAC) Chapter 350, Texas Risk Reduction Program (TRRP) rule §350.76, pertaining to the chemical-specific approaches used for developing and demonstrating attainment of the critical human health protective concentration levels (PCLs) for dioxins/furans and dioxin-like polychlorinated biphenyls (PCBs).

The TCEQ proposes to update the approach for developing soil PCLs for dioxins/furans and dioxin-like PCBs used for residential and commercial/industrial land use under TRRP. The current approach is covered in the TRRP rule in §350.76(d) and §350.76(e), and the current PCLs are specified in the TRRP rule at §350.76(e)(3). The PCLs contained in the existing TRRP rule were based on a then-current 1998 United States Environmental Protection Agency (EPA) policy memo (OSWER Directive 9200.4-26), which described an approach for addressing dioxins in soil. Since that time, the EPA completed a reassessment of this approach and derived an updated reference dose for dioxins. Based on more recent scientific evaluations, the TCEQ can support the use of a reference dose in the range of EPA's updated value, and that value

will be reflected in the approach provided in this proposed rule revision. Upon the effective date of the adopted revisions, any activity conducted pursuant to TRRP must comply with the revised approach for developing dioxins/furans and dioxin-like PCBs and the soil PCLs used for residential and commercial/industrial land use under TRRP.

Additionally, the proposed rule revision updates the toxicity equivalency factors (TEFs) related to dioxins/furans and dioxin-like PCBs contained in §350.76(d)(2)(B). Dioxins/furans and dioxin-like PCBs are mixtures of chemical compounds (congeners) with different toxicities. TRRP §§350.76(d) and (e) use TEFs to assess the relative toxicity of the individual congeners compared to the toxicity of the most toxic congener, 2,3,7,8-tetrachlorodibenzodioxin (2,3,7,8-TCDD), within a mixture of dioxins/furans and dioxin-like PCBs. The TEFs are applied as a multiplier of the concentration of each measured congener to calculate a 2,3,7,8-TCDD toxicity equivalency quotient (TEQ) concentration. The resulting 2,3,7,8-TCDD TEQ concentrations for each congener are summed to derive a total 2,3,7,8-TCDD TEQ concentration for the entire mixture. The total 2,3,7,8-TCDD TEQ concentration is then compared to a 2,3,7,8-TCDD PCL to determine the nature and extent of contamination and whether a remedy is required. The TRRP rule provides specific TEFs for various dioxins/furans and dioxin-like PCB compounds and directs persons to use these TEF

values when demonstrating attainment of the critical PCL.

When the TRRP rule was promulgated in 1999, the most recent TEF values established by the World Health Organization (WHO) in 1998 were listed in the rule. However, based on evolving science and current data, WHO updated the TEF values in 2005 and continues to develop the most current TEF values. EPA and other regulatory agencies have been using the 2005 WHO TEFs. The proposed TRRP §350.76 rule revision will allow cleanups being conducted under TRRP to adopt the 2005 WHO TEFs or more ~~most~~ recent TEFs established by a scientifically valid source that have been reviewed and approved by ~~that~~ the executive director ~~determines are appropriate based on current science~~. Upon the effective date of the adopted revisions, any activity conducted pursuant to TRRP must comply with the ~~latest~~ 2005 WHO TEFs, or more recent TEFs established by a scientifically valid source that have been reviewed and approved by the executive director, ~~from an authoritative source (e.g., WHO or another scientifically credible source)~~ for dioxin-like PCBs and dioxins/furans.

The TRRP chemical-specific PCL approaches for dioxins/furans and dioxin-like PCBs need to be revised to reflect updated information on dioxin toxicity and address appropriate updates to the WHO TEFs for dioxins/furans and dioxin-like PCBs. Updating the rule will also provide TCEQ with the flexibility needed to evaluate and adopt ~~alternative~~ more recent TEFs that have been derived since the TRRP rule was

first adopted in 1999.

Section by Section Discussion

Subchapter D: Development of Protective Concentration Levels

The commission proposes to amend §350.76(d)(2)(B) by removing the figure and the directive for persons to use TEFs specified therein when determining a 2,3,7,8-TCDD TEQ for dioxin-like PCBs. The proposed rule would direct persons to apply the ~~latest~~2005 WHO TEFs, or more recent TEFs established by a scientifically valid source that have been reviewed and approved by the executive director, to the measured concentrations for each of the dioxin-like PCBs. ~~This subsection is also revised to include language that the person shall use guidance provided by the executive director for determining the constituents considered to be dioxin-like PCBs that must be evaluated, including the process by which they should be evaluated.~~

The commission proposes to add new subsection §350.76(d)(3). This subsection clarifies that a person may be required to evaluate the adequacy of a response action when the executive director determines that a substantial change in the TEFs alters the calculated TEQ in such a way that results in the actual toxicity of the dioxin-like PCB mixture not being protective of human health and the environment. The rule also specifies that it is possible that a person might not be required to conduct a response action in the case where a significant change in the TEFs affects the TEQ in such a way

that reveals a response action is no longer warranted to protect human health and the environment. To maintain the numerical order of the rule, previous subsections (d)(3) and (d)(4) are being renumbered to (d)(4) and (d)(5), respectively.

The commission proposes to amend §350.76(e)(1) by removing the directive for persons to use TEFs specified in the figure included in subsection (d)(2)(B), when demonstrating attainment of the critical PCL for 2,3,7,8-TCDD. The proposed rule would direct persons to apply the ~~latest~~2005 WHO TEFs, or more recent TEFs established by a scientifically valid source that have been reviewed and approved by the executive director, to demonstrate attainment of the critical PCL for 2,3,7,8-TCDD. ~~This subsection is also revised to include language that the person shall use guidance provided by the executive director for determining the constituents considered to be dioxins and furans that must be evaluated, including the process by which they should be evaluated.~~

The commission proposes to amend §350.76(e)(1)(B) to clarify that, when homologue-specific analytical data are available, persons shall apply the ~~latest~~2005 WHO TEFs or more recent TEFs established by a scientifically valid source that have been reviewed and approved by the executive director. Additionally, this subsection clarifies that if a homologue class has more than one TEF for different congeners, persons shall use the highest of the latest TEFs that have been reviewed and approved by the executive

director for that congener class. ~~This subsection is also revised to include language that the person shall use guidance provided by the executive director for determining the constituents considered to be dioxins and furans that must be evaluated, including the process by which they should be evaluated.~~ Additionally, the proposed rule removes the language specifying that a TEF value of 0.5 be used for the pentachlorodibenzofuran homologue class.

The commission proposes to amend §350.76(e)(1)(C) to clarify that, when congener-specific analytical data are available, persons shall apply the ~~latest~~2005 WHO TEFs or more recent TEFs established by a scientifically valid source that have been reviewed and approved by the executive director. ~~This subsection is also revised to include language that the person shall use guidance provided by the executive director for determining the constituents considered to be dioxins and furans that must be evaluated, including the process by which they should be evaluated.~~

The commission proposes to add new subsection §350.76(e)(1)(D). This subsection clarifies that a person may be required to evaluate the adequacy of a response action when the executive director determines that a substantial change in the TEFs alters the calculated TEQ in such a way that it results in the actual toxicity of the dioxin and furan mixture not being protective of human health and the environment. The rule also specifies that it is possible that a person might not be required to conduct a response

action in the case where a significant change in the TEFs affects the TEQ in such a way that reveals a response action is no longer warranted to protect human health and the environment.

The commission proposes to amend §350.76(e)(3) by removing language that establishes the critical soil PCL for residential properties for all three tiers as 1 part per billion (ppb) and for commercial/industrial properties for all three tiers as 5 ppb. The proposed rule would specify that the critical soil PCLs for residential and commercial/industrial properties shall be calculated for a 2,3,7,8-TCDD TEQ according to the equations and rule provisions provided in §350.75.

Fiscal Note: Costs to State and Local Government

Kyle Girten, Analyst in the Budget and Planning Division, has determined that for the first five-year period the proposed rules are in effect, fiscal implications are anticipated for TCEQ and potentially a local governmental entity as a result of administration or enforcement of the proposed rule. Implementation of amendments to the proposed rule in §350.76 are anticipated to result in increased costs for the assessment and remediation of a small number of sites whose remediation is managed and funded by TCEQ and/or a municipality. The rulemaking is not anticipated to result in fiscal implications for other state or local governmental entities.

Costs for sample collection, laboratory analysis, and data analysis are anticipated to increase for these sites when they are being assessed. Given that this rulemaking will result in lower assessment levels for dioxins/furans and dioxin-like PCBs in soil, an increased number of samples would need to be collected at sites to delineate the horizontal and vertical extent of contamination. Laboratory analysis costs for these parameters could also increase significantly because laboratories would be required to use analytical methods that can meet the required level of performance based on the lowered PCL. Costs for remediation are also anticipated to increase because greater volumes of soil may need to be remediated to the lower PCLs.

Costs cannot be estimated because they will vary depending on the extent of contamination that is found and the remedy (e.g., excavation, capping, in-situ treatment) that is implemented; however, it is anticipated that any cost increases can be addressed at current appropriation levels.

Public Benefits and Costs

Mr. Girten determined that for each year of the first five years the proposed rules are in effect, the public benefit will be increased consistency with the latest science. Specifically, the critical soil PCLs for 2,3,7,8-TCDD and the approach for developing dioxin/furan and dioxin-like PCB soil PCLs would be implemented in a manner consistent with the latest scientific evaluations from EPA and other regulatory

agencies.

This rulemaking is anticipated to result in increased costs for the assessment and remediation by responsible or other performing parties at a small number of sites. In addition, it is possible that closed sites may need to be revisited if a lower soil PCL was determined to be a substantial change in circumstance, or if risks of exposure to concentrations of dioxins/furans and dioxin-like PCBs above new soil PCLs needed to be addressed.

Costs for sample collection, laboratory analysis, and data analysis may increase for these sites when they are being assessed. Given that this rulemaking will result in lower assessment levels for dioxins/furans and dioxin-like PCBs in soil, an increased number of samples may need to be collected at sites to delineate the horizontal and vertical extent of contamination. Laboratory analysis costs for these parameters could also increase significantly because laboratories would be required to use analytical methods that can meet the required level of performance based on the lowered PCL. Costs for remediation may also increase as greater volumes of soil may need to be remediated because of the lower assessment levels and soil PCLs.

Costs cannot be estimated because they will vary depending on the extent of contamination that is found and the remedy (e.g., excavation, capping, in-situ

treatment) that is implemented.

Local Employment Impact Statement

The commission reviewed this proposed rulemaking and determined that a Local Employment Impact Statement is not required because the proposed rulemaking does not adversely affect a local economy in a material way for the first five years that the proposed rule is in effect.

Rural Communities Impact Assessment

The commission reviewed this proposed rulemaking and determined that the proposed rulemaking does not adversely affect rural communities in a material way for the first five years that the proposed rules are in effect. The amendments would apply statewide and have the same effect in rural communities as in urban communities.

Small Business and Micro-Business Assessment

No adverse fiscal implications are anticipated for small or micro-businesses due to the implementation or administration of the proposed rule for the first five-year period the proposed rules are in effect.

Small Business Regulatory Flexibility Analysis

The commission reviewed this proposed rulemaking and determined that a Small

Business Regulatory Flexibility Analysis is not required because the proposed rule does not adversely affect a small or micro-business in a material way for the first five years the proposed rules are in effect.

Government Growth Impact Statement

The commission prepared a Government Growth Impact Statement assessment for this proposed rulemaking. The proposed rulemaking does not create or eliminate a government program and will not require an increase or decrease in future legislative appropriations to the agency. The proposed rulemaking does not require the creation of new employee positions, eliminate current employee positions, nor require an increase or decrease in fees paid to the agency. The proposed rulemaking amends an existing regulation, and it does not create, expand, repeal, or limit this regulation. The proposed rulemaking does not increase or decrease the number of individuals subject to its applicability. During the first five years, the proposed rule should not impact positively or negatively the state's economy.

Draft Regulatory Impact Analysis Determination

The commission reviewed the proposed rulemaking in light of the regulatory analysis requirements of the Texas Government Code, §2001.0225. The commission determined that the action is not subject to Texas Government Code, §2001.0225, because it does not meet the definition of a "major environmental rule" as defined in

that statute. A "major environmental rule" is a rule, the specific intent of which is to protect the environment or reduce risks to human health from environmental exposure, and that may adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, or the public health and safety of the state or a sector of the state.

The specific intent of the proposed rule is to adjust TRRP §350.76 methods and measures related to dioxins/furans and dioxin-like PCBs to align with current accepted science. Specifically, the proposed rule would revise the dioxin/furan and dioxin-like PCB soil PCLs used for residential and commercial/industrial land use under TRRP and update TEFs related to dioxins/furans and dioxin-like PCBs contained in §350.76 in light of more recent scientific evaluation, evolving science, and current data. The proposed rule is not expected to adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, or the public health and safety of the state or a sector of the state. Instead, the proposed rule may affect the costs and timeliness of cleanups of those sites where dioxins/furans or dioxin-like PCBs are the subject of investigation or remediation pursuant to TRRP. The proposed amendments do not rise to the level of material, but instead are limited to incorporating modifications to the current regulatory framework based on current science and data regarding dioxins/furans and dioxin-like PCBs. Therefore, the proposed rulemaking does not meet the definition of a major environmental rule.

Furthermore, even if the proposed rulemaking did meet the definition of a major environmental rule, the proposed rules do not meet any of the four applicability requirements listed in Texas Government Code, §2001.0225. Section 2001.0225 applies to a major environmental rule, the result of which is to: exceed a standard set by federal law, unless the rule is specifically required by state law; exceed an express requirement of state law, unless the rule is specifically required by federal law; exceed a requirement of a delegation agreement or contract between the state and an agency or representative of the federal government to implement a state and federal program; or adopt a rule solely under the general powers of the agency instead of under a specific state law. The proposed rulemaking does not meet any of the four applicability requirements listed in Texas Government Code, §2001.0225.

First, the rulemaking does not exceed a standard set by federal law. Second, the rulemaking does not propose requirements that are more stringent than existing state laws. Third, the proposed rulemaking does not exceed a requirement of a delegation agreement or contract between the state and an agency or representative of the federal government, where the delegation agreement or contract is to implement a state and federal program. Fourth, this rulemaking does not seek to adopt a rule solely under the general powers of the agency. Rather, sections of the TWC, Chapter 26, and THSC, Chapter 361, authorize this rulemaking, which are cited in the Statutory Authority

section of this preamble.

The commission invites public comment regarding the Draft Regulatory Impact Analysis Determination during the public comment period. Written comments on the Draft Regulatory Impact Analysis Determination may be submitted to the contact person at the address listed under the Submittal of Comments section of this preamble.

Takings Impact Assessment

The commission evaluated the proposed rules and performed analysis of whether the proposed rules constitute a taking under Texas Government Code, Chapter 2007. The specific purpose of the proposed rules is to adjust TRRP §350.76 methods and measures related to dioxins/furans and dioxin-like PCBs to align with current accepted science. The proposed rules would substantially advance this stated purpose by revising the soil PCLs and updating the TEFs related to these constituents.

Promulgation and enforcement of these proposed rules would be neither a statutory nor a constitutional taking of private real property. Specifically, the subject proposed regulations do not affect a landowner's rights in private real property because this

rulemaking does not burden (constitutionally); nor restrict or limit the owner's right to property and reduce its value by 25% or more beyond that which would otherwise exist in the absence of the regulations. In other words, the proposed rules will not burden private real property because they incorporate modifications to the current regulatory framework based on current science and data regarding dioxins/furans and dioxin-like PCBs.

Consistency with the Coastal Management Program

This rulemaking is not applicable to the Coastal Management Program.

Announcement of Hearing

The commission will hold a hold a hybrid virtual and in-person public hearing on this proposal in Austin on Monday, September ~~16~~30, 2024, at 9 a.m. in Building F, Room 2210 at the commission's central office located at 12100 Park 35 Circle. The hearing is structured for the receipt of oral or written comments by interested persons. Individuals may present oral statements when called upon in order of registration. Open discussion will not be permitted during the hearing; however, commission staff members will be available to discuss the proposal 30 minutes prior to the hearing.

Individuals who plan to attend the hearing virtually and want to provide oral comments and/or want their attendance on record must register by Thursday,

September ~~12~~26, 2024. To register for the hearing, please email Rules@tceq.texas.gov and provide the following information: your name, your affiliation, your email address, your phone number, and whether or not you plan to provide oral comments during the hearing. Instructions for participating in the hearing will be sent on Friday, September ~~13~~27, 2024, to those who register for the hearing.

For the public who do not wish to provide oral comments but would like to view the hearing may do so at no cost at:

https://teams.microsoft.com/l/meetup-join/19%3ameeting_MzY3YmVhNjItZWIxOS00OWEyLWI5ZTgtZjYyY2NhNzcwNjg1%40thread.v2/0?context=%7b%22Tid%22%3a%22871a83a4-a1ce-4b7a-8156-3bcd93a08fba%22%2c%22Oid%22%3a%22e74a40ea-69d4-469d-a8ef-06f2c9ac2a80%22%7d

Persons who have special communication or other accommodation needs who are planning to attend the hearing should contact Sandy Wong, Office of Legal Services at (512) 239-1802 or 1-800-RELAY-TX (TDD). Requests should be made as far in advance as possible.

Submittal of Comments

Written comments may be submitted to Gwen Ricco, MC 205, Office of Legal Services, Texas Commission on Environmental Quality, P.O. Box 13087, Austin, Texas 78711-3087, or faxed to *fax4808@tceq.texas.gov*. Electronic comments may be submitted at: https://tceq.commentinput.com/comment/search. File size restrictions may apply to

comments being submitted via the TCEQ Public Comments system. All comments should reference Rule Project Number 2024-023-350-WS. The comment period opens on August ~~16~~30, 2024, and closes at 11:59 p.m. on ~~September 17~~October 1, 2024. Please choose one of the methods provided to submit your written comments.

Copies of the proposed rulemaking can be obtained from the commission's website at *https://www.tceq.texas.gov/rules/propose_adopt.html*. For further information, please contact Scott Settemeyer, Rule Project Manager, Remediation Division, 512-239-3429.

SUBCHAPTER D: DEVELOPMENT OF PROTECTIVE CONCENTRATION LEVELS

§350.76

Statutory Authority

The rule change is proposed under the authority of Texas Water Code (TWC), §5.102, concerning general powers of the commission; TWC, §5.103, which authorizes the commission to adopt any rules necessary to carry out its power and duties; TWC, §5.105, which authorizes the commission to establish and approve all general policy of the commission by rule; TWC, §26.011, which authorizes the commission to administer the provisions of TWC, Chapter 26; TWC, §26.039, which states that activities which are inherently or potentially capable of causing or resulting in the spillage or accidental discharge of waste or other substances and which pose serious or significant threats of pollution are subject to reasonable rules establishing safety and preventative measures which the commission may adopt or issue; TWC, §26.121, which prohibits persons from discharging wastes into or adjacent to any water in the state unless authorized to do so and prohibits persons from engaging in any other activity which causes pollution of any water in the state; TWC, §§26.262 and 26.264, which state it is the policy of this state to prevent the spill or discharge of hazardous substances into the waters in the state and authorizes the commission to issue rules to carry out the policy; TWC, §§26.341 and 26.345, which state it is the policy of this state to maintain and protect quality of groundwater and surface water resources from pollution from certain substances in underground and above-ground storage tanks and

authorizes the commission to adopt rules to carry out the policy; TWC, §26.401, which states that it is the policy of this state that discharges of pollutants, disposal of wastes, or other activities subject to state regulation be conducted in a manner to maintain and not impair groundwater uses or pose a public health hazard, and that groundwater quality be restored if feasible; Texas Health & Safety Code (THSC), §§361.017 and 361.024, which establish the commission's jurisdiction over all aspects of the management of industrial solid waste and hazardous municipal waste with all power necessary or convenient to carry out the responsibilities of that jurisdiction and authorizes the commission to adopt rules; and THSC, Chapter 361, Subchapter F, which authorizes the commission to identify, assess, and remediate facilities that may constitute an imminent and substantial endangerment to public health and safety or the environment due to a release or threatened release of hazardous substances into the environment.

The proposed rules implement TWC, Chapter 26, and THSC, Chapter 361.

§350.76. Approaches for Specific Chemicals of Concern to Determine Human Health Protective Concentration Levels.

(a) General.

(1) Due to the unique nature of the toxicity and/or exposure, the person shall use the COC-specific approaches described in this section for the following COCs:

(A) cadmium;

(B) lead;

(C) polychlorinated biphenyls;

(D) polychlorinated dibenzodioxins and dibenzofurans;

(E) polycyclic aromatic hydrocarbons; and

(F) total petroleum hydrocarbons.

(2) Except for the specific provisions contained in this section, the person shall establish RBELs and PCLs in accordance with the standard procedures outlined in the previous sections of this subchapter.

(3) This section addresses only those exposure pathways for which PCL equations are provided in this subchapter. When dealing with other exposure pathways as required in §350.71(c) of this title (relating to General Requirements), the executive director will specify how those pathways should be addressed for these COCs using the best available science.

(4) The person shall use the figures as required in subsections (b) - (g) of this section.

(b) Cadmium.

(1) In calculating residential soil PCLs that are protective for noncarcinogenic effects for all tiers, the person shall incorporate age-adjusted exposure assumptions for the soil ingestion, vegetable ingestion, and dermal soil exposure pathways. Accordingly, 30 years of cadmium exposure shall be partitioned into three specific exposure periods: <1 - 6 years, 6 - 18 years, and 18 - 30 years. Cadmium intake shall be calculated for each of these periods, based on the period-specific exposure assumptions. The soil PCL for cadmium shall be a function of the final integrated intake estimate, which shall be determined by time-weighting intake from each of the three exposure periods. The age-adjusted RBEL equations and default parameters to be used for cadmium are provided in the following figure. The soil PCL

for cadmium shall be calculated by combining the pathway-specific PCLs as outlined in §350.75(i)(6) of this title (relating to Tiered Human Health Protective Concentration Level Evaluation).

Figure: 30 TAC §350.76(b)(1)

Age-Adjusted RBEL Equations and Default Exposure Factors for Evaluating the Noncarcinogenic Effects of Cadmium Residential Land Use

Dermal Contact with Non-Carcinogenic COCs in Soil - RBEL (mg/kg)

$$^{Soil}RBEL_{Derm\text{-}nc} = \frac{HQ \times RfD_d \times AT.AgeAdj.res \times 365\ days/yr}{10^{-6}\ kg/mg \times EF.res \times DF.adj \times ABS.d}$$

Ingestion of Non-Carcinogenic COCs in Soil - RBEL (mg/kg)

$$^{Soil}RBEL_{Ing\text{-}nc}(mg/kg) = \frac{HQ \times RfD_o \times AT.AgeAdj.res \times 365\ days/yr}{10^{-6}\ kg/mg \times EF.res \times IRsoil.AgeAdj.res \times RBAF}$$

Ingestion of Non-Carcinogenic COCs in Above-Ground Vegetables - RBEL (mg/kg)

$$^{Abg}RBEL_{Ing\text{-}nc} = \frac{HQ \times RfD_o \times AT.AgeAdj.res \times 365\ day/yr}{EF.res \times IRabg.AgeAdj.res}$$

Ingestion of Non-Carcinogenic COCs in Below-Ground Vegetables - RBEL (mg/kg)

$$^{Bg}RBEL_{Ing\text{-}nc} = \frac{HQ \times RfD_o \times AT.AgeAdj.res \times 365\ day/yr}{EF.res \times IRbg.AgeAdj.res}$$

HQ	Hazard Quotient (unitless)	1
AT.AgeAdj.res	Averaging Time - (yr)-Age-adjusted	30
RfD_o	Oral Reference Dose (mg/kg-day)	Chemical Specific
RfD_d	Dermal Reference Dose (mg/kg-day)	Chemical Specific
EF.res	Exposure Frequency (days/yr) (event/yr for dermal soil)	350
DF.adj	Dermal Adjustment Factor (mg-yr/kg-event)	352
ABS.d	Dermal Absorption Fraction (unitless)	Chemical Specific

Irsoil.AgeAdj.res	Age-Adjusted Soil Ingestion Rate (mg-yr/kg-day)	120
	Age-Adjusted Vegetable Ingestion Rate (kg-yr/kg-day)	
IRabg.AgeAdj.res	Above-Ground Vegetables	0.0028
IRbg.AgeAdj.res	Below-Ground Vegetables	0.0012
RBAF	Relative Bioavailability Factor	1

(2) In calculating residential and commercial/industrial soil PCLs for all tiers, the person shall use the reference dose values for cadmium in food in evaluating exposures to cadmium through the soil ingestion, vegetable ingestion, and dermal soil exposure pathways.

(c) Lead.

(1) The Tier 1 residential soil PCL ($^{Tot}Soil_{Comb}$) for lead is 500 mg/kg.

(2) Subject to prior approval by the executive director, the person may use property-specific data in conjunction with a lead model approved by the executive director (e.g., EPA Integrated Exposure Uptake Biokinetic model for lead in children (version 1.0 from 2005)) to calculate a Tier 3 residential soil PCL ($^{Tot}Soil_{Comb}$) for lead. The person shall submit information to the executive director which demonstrates that variance from default model inputs is supported by property-specific information (e.g., data from a scientifically valid bioavailability study using property-specific soils). Property-specific model input values must be approved by the executive director. Consistent with the development of residential RBELs for COCs without chemical-specific approaches in accordance with §350.74 of this title (Development of Risk-Based Exposure Limits), variance from certain model default exposure factors such as soil/dust ingestion rates and exposure frequency to less conservative (i.e., lower) numerical values shall not be allowed.

(3) The commercial/industrial soil PCL ($^{Tot}Soil_{Comb}$) is based only on the soil ingestion pathway ($^{Soil}Soil_{Ing}$). The person shall use the exposure algorithm and default exposure factors in the following figure for calculating the Tier 1 commercial/industrial $^{Soil}RBEL_{Ing}$ value.

Figure: 30 TAC §350.76(c)(3)

Equation for Adult Lead Exposure Commercial/Industrial Land Use (Tier 1)
$^{Soil}Soil_{Ing}=^{Soil}RBEL_{Ing}$
$$^{Soil}RBEL_{Ing}(\mu g/g)=\frac{\left(PbB_{95}\,fetal/\left(R\times\left(GSD_i\right)^{1.645}\right)\right)-PbB0}{BKSF\times\left(IR_{sd}\times AF_{sd}\times EF_{sd}/365\right)}$$

Parameter	**Definition (units)**	**Default**
PbB_{95} fetal	95th Percentile PbB in Fetus (µg/dL)	10
R	Mean Ratio of Fetal to Maternal PbB	0.9
GSD_i	Individual Geometric Standard Deviation	1.91
PbB0	Baseline Blood Lead Value (µg/dL)	1.64
BKSF	Biokinetic Slope Factor (µg/dL per µg/day)	0.4
IR_{sd}	Soil/Dust Ingestion Rate (g/day)	0.05
EF_{sd}	Soil/Dust Exposure Frequency (days/yr)	250
AF_{sd}	Absolute Absorption Fraction of Lead in Soil/Dust	0.10

(4) The person may use a different exposure algorithm as presented in the following figure that considers soil and dust separately for calculating the Tier 2 and 3 commercial/industrial $^{Soil}RBEL_{Ing}$ value in cases where the person has adequate direct measurement data on the concentrations of lead in both soil and dust at the affected property. In addition, in calculating Tier 2 or 3 $^{Soil}RBEL_{Ing}$ values, the person may deviate from the default exposure factors as shown in the figure in paragraph (3) of this subsection and the following figure if property-specific or defensible alternative data (e.g., from open literature or privately funded studies) adequately support such an approach. The specific exposure factors for which the person may use property-specific or scientifically defensible alternative values are the following:

Figure: 30 TAC §350.76(c)(4)

Equation for Adult Lead Exposure Commercial/Industrial Land Use (Tiers 2 & 3 only)

$$^{Soil}Soil_{Ing} = {}^{Soil}RBEL_{Ing}$$

$$^{Soil}RBEL_{Ing}(\mu g/g) = \frac{\left(PbB_{95}\,fetal/\left(R\times\left(GSD_i\right)^{1.645}\right)\right)-PbB0}{BKSF\times\left(\left(IR_{sf}\times AF_s\times EF_{s/365}\right)+\left(K_{sd}\times IR_d\times AF_d\times EF_d/365\right)\right)}$$

Parameter	Definition (units)	Defaults
PbB_{95} fetal	95th Percentile PbB in Fetus (µg/dL)	10
R	Mean Ratio of Fetal to Maternal PbB	0.9
GSD_i	Individual Geometric Standard Deviation	1.91
PbB0	Baseline Blood Lead Value (µg/dL)	1.64
BKSF	Biokinetic Slope Factor (µg/dL per µg/day)	0.4

IR_s	Soil Ingestion Rate (g/day)	0.025
IR_d	Dust Ingestion Rate (g/day)	0.025
K_{sd}	Ratio of Concentration in Dust to that in Soil	***
EF_s	Soil Exposure Frequency (days/yr)	250
EF_d	Dust Exposure Frequency (days/yr)	250
AF_s	Absolute Absorption Fraction of Lead in Soil	0.10
AF_d	Absolute Absorption Fraction of Lead in Dust	0.10
***Based on direct measurement data on the concentrations of lead in both soil and dust at the affected property.		

(A) individual geometric standard deviation (GSD_i);

(B) baseline blood lead (PbBO);

(C) absolute absorption fraction of lead in soil/dust (Afsd);

(D) absolute absorption fraction of lead in soil (AFs); and

(E) absolute absorption fraction of lead in dust (Afd).

(d) Polychlorinated Biphenyls.

(1) In calculating Tier 1 residential and commercial/industrial soil and groundwater PCLs, the person shall use the upper-reference point of the upper-bound

slope factors (2 (mg/kg-day)$^{-1}$) for the soil ingestion, dermal contact with soil, vegetable ingestion, and inhalation (both vapor and particulate phases) exposure pathways.

(2) For Tiers 2 and 3, the person may use alternative slope factors when the following conditions are met:

(A) The person may use the lower reference point of the upper bound slope factors (0.4 (mg/kg-day)$^{-1}$) to calculate an inhalation unit risk factor when evaluating inhalation exposures to volatilized polychlorinated biphenyls. The person must still use the upper reference point of the upper bound slope factors (2 (mg/kg-day)$^{-1}$) to evaluate inhalation exposures to particulate phase polychlorinated biphenyls.

(B) The person may conduct congener or isomer analyses. The person may use the lowest reference point of the upper-bound slope factors (0.07 (mg/kg-day)$^{-1}$) for the soil ingestion, dermal contact with soil, and inhalation exposure pathways if congener or isomer analyses verify that congeners with more than four chlorines comprise less than one-half percent of total polychlorinated biphenyls in a given exposure medium. The upper reference point of the upper-bound slope factors (2 (mg/kg-day)$^{-1}$) shall be used for all other exposure pathways regardless of the results of the congener- or isomer-specific analyses. If congener or isomer analyses indicate that congeners with more than four chlorines comprise greater than one-half percent

of total polychlorinated biphenyls in a given exposure medium, then the person shall use the upper-reference point of the upper-bound slope factors (2 $(mg/kg\text{-}day)^{-1}$) for all pathways for that specific exposure medium. Further, when congener concentrations are available, the contribution of dioxin-like polychlorinated biphenyls to total dioxin equivalents shall be considered. The person shall determine the constituents considered to be dioxin-like polychlorinated biphenyls from the list established by the World Health Organization in 2005, or a more recent list of constituents established by a scientifically valid source that has been reviewed and approved by the executive director. The person shall apply the ~~latest~~ toxicity equivalency factors established by the World Health Organization in 2005, or more recent toxicity equivalency factors established by a scientifically valid source that have been reviewed and approved by the executive director, [specified in the following figure]to the measured concentrations for each of the dioxin-like polychlorinated biphenyls. ~~Persons shall use guidance provided by the executive director for determining the constituents considered to be dioxin-like polychlorinated biphenyls that must be evaluated, including the process by which they should be evaluated.~~ These values shall then be summed to obtain a 2,3,7,8-TCDD toxicity equivalency quotient. Toxicity equivalency quotients for dioxin-like polychlorinated biphenyls shall then be added to those for other dioxin-like compounds as specified in subsection (e) of this section to yield a total toxicity equivalency quotient concentration. This total toxicity equivalency ~~quotients~~quotient concentration shall then be compared with the critical PCL for

TCDD, 2,3,7,8-(dioxin). When addressing dioxin-like polychlorinated biphenyls in this manner, the person shall subtract the concentration of dioxin-like polychlorinated biphenyls from the total polychlorinated biphenyls concentration to avoid overestimating dioxin-like polychlorinated biphenyls by evaluating them twice.

[Figure: 30 TAC §350.76(d)(2)(B)]

Toxicity Equivalency Factors (TEFs) for Dioxin-Like Compounds

Congener/Class	**TEF Value**
2,3,7,8-Substituted Dibenzodioxins	
2,3,7,8-Tetrachlorodibenzodioxin	1
2,3,7,8-Pentachlorodibenzodioxins	1
2,3,7,8-Hexachlorodibenzodioxins	0.1
2,3,7,8-Heptachlorodibenzodioxins	0.01
Octachlorodibenzodioxins	0.0001
2,3,7,8-Substituted Dibenzofurans	
2,3,7,8-Tetrachlorodibenzofuran	0.1
1,2,3,7,8-Pentachlorodibenzofuran	0.05
2,3,4,7,8-Pentachlorodibenzofuran	0.5
2,3,7,8-Hexachlorodibenzofurans	0.1
2,3,7,8-Heptachlorodibenzofurans	0.01
Octachlorodibenzofurans	0.0001
Dioxin-Like PCBs	
3,4,4’,5-TCB (81)	0.0001

3,3’,4,4’-TCB (77)	0.0001
3,3’,4,4’,5-PeCB (126)	0.1
3,3’,4,4’,5,5’-HxCB (169)	0.01
2,3,3’,4,4’-PeCB (105)	0.0001
2,3,4,4’,5-PeCB (114)	0.0005
2,3’,4,4’,5-PeCB (118)	0.0001
2’,3,4,4’,5-PeCB (123)	0.0001
2,3,3’,4,4’,5-HxCB (156)	0.0005
2,3,3’,4,4’,5’-HxCB (157)	0.0005
2,3’,4,4’,5,5’-HxCB (167)	0.00001
2,3,3’,4,4’,5,5’-HpCB (189)	0.0001

(3) The executive director may determine that a change in a toxicity equivalency factor has been of such magnitude that the calculated toxicity equivalency quotient would not be representative of the actual toxicity of the dioxin-like polychlorinated biphenyl mixture and not protective of human health and the environment. If the executive director makes such a determination, then the person must evaluate the adequacy of the response action. If the executive director determines that a ~~subsequen~~t change in a toxicity equivalency factor is of such magnitude that the calculated toxicity equivalency quotient would not be representative of the actual toxicity of the dioxin-like polychlorinated biphenyl mixture such that the proposed response action is no longer warranted to protect human

health and the environment, then a response action based on the previous toxicity equivalency quotient shall no longer be required.

(4[3]) In evaluating inhalation exposures under Tiers 2 or 3, the person shall convert the appropriate slope factor to an inhalation unit risk factor, based on the following equation: Inhalation Unit Risk Factor (risk per µg/m^3)= oral slope factor x 20 m^3/day divided by 70 kg x 10^{-3} mg/µg.

(5[4]) In Tiers 2 and 3, and only when applicable for a specific site, the person may set soil PCLs based on the requirements of the Toxic Substances Control Act, 40 Code of Federal Regulations Parts 750 and 761, as amended. Sites must comply fully with all applicable Toxic Substances Control Act, as amended, requirements when establishing the soil PCL for polychlorinated biphenyls in this manner.

(e) Polychlorinated Dibenzo-p-Dioxins and Dibenzofurans.

(1) In demonstrating attainment of the critical PCL for TCDD, 2,3,7,8-(dioxin), the person shall determine the constituents considered to be dioxins and furans from the list established by the World Health Organization in 2005, or a more recent list of constituents established by a scientifically valid source that has been reviewed and approved by the executive director. The person shall apply the ~~latest~~ toxicity equivalency factors established by the World Health Organization in 2005, or

more recent toxicity equivalency factors established by a scientifically valid source that have been reviewed and approved by the executive director,[as shown in the figure in subsection (d)(2)(B) of this section] to the measured concentrations of the dioxins and furans in accordance with the following procedures. ~~Persons shall use guidance provided by the executive director for determining the constituents considered to be dioxins and furans that must be evaluated, including the process by which they should be evaluated.~~

(A) When analytical data are only available for total dioxins/furans, the person shall assume that the mixture consists solely of 2,3,7,8-TCDD, and a toxicity equivalency factor value of 1.0 shall be applied to the measured concentration to yield the 2,3,7,8-TCDD toxicity equivalency quotient concentration for the sample.

(B) When homologue-specific analytical data are available (e.g., tetrachlorodibenzodioxins), the person shall assume that each homologue class is comprised solely of 2,3,7,8-substituted congeners, and shall apply the ~~latest~~ toxicity equivalency factors established by the World Health Organization in 2005, or more recent toxicity equivalency factors established by a scientifically valid source that have been reviewed and approved by the executive director,[specified for the 2, 3, 7, 8-substituted congeners in the homologue class shall be applied] to the measured concentrations for that homologue class. ~~Persons shall use guidance provided by the~~

~~executive director for determining the constituents considered to be dioxins and furans that must be evaluated, including the process by which they should be evaluated.~~ If a homologue class has more than one toxicity equivalency factor ~~TEF~~ for different congeners, the highest toxicity equivalency factor ~~TEF to have~~ that has been reviewed and approved by the executive director shall be used for that congener class. [A toxicity equivalency factor value of 0.5 should be used for the pentachlorodibenzofuran homologue class.]The toxicity equivalency quotient concentrations for each homologue class shall be summed to obtain a total toxicity equivalency quotient concentration for the sample.

(C) When congener-specific analytical data are available (e.g., 1, 2, 3, 4, 7, 8-hexachlorodibenzofuran), the person shall determine the constituents considered to be dioxins and furans from the list established by the World Health Organization in 2005, or a more recent list of constituents established by a scientifically valid source that has been reviewed and approved by the executive director. The person shall apply the ~~latest~~ toxicity equivalency factors established by the World Health Organization in 2005, or more recent toxicity equivalency factors established by a scientifically valid source that have been reviewed and approved by the executive director for the 2, 3, 7, 8-substituted congeners, to the measured concentrations. ~~Persons shall use guidance provided by the executive director for determining the constituents considered to be dioxins and furans that must be evaluated, including the process by which they should be evaluated.~~ The toxicity

equivalency quotient concentrations for each 2, 3, 7, 8-substituted congener shall then be summed to obtain a total toxicity equivalency quotient concentration for the sample.

(D) The executive director may determine that a change in a toxicity equivalency factor has been of such magnitude that the calculated toxicity equivalency quotient would not be representative of the actual toxicity of the dioxin and furan mixture and not protective of human health and the environment. If the executive director makes such a determination, the person must evaluate the adequacy of the response action. If the executive director determines that a ~~subsequent~~ change in a toxicity equivalency factor is of such magnitude that the calculated toxicity equivalency quotient would not be representative of the actual toxicity of the dioxin and furan mixture such that the proposed response action is no longer warranted to protect human health and the environment, then a response action based on the previous toxicity equivalency quotient shall no longer be required.

(2) The person shall then compare the total toxicity equivalency quotient concentration established in paragraph (1) of this subsection to the critical PCL for TCDD, 2, 3, 7, 8-(dioxins).

(3) The person shall calculate [The]the critical soil PCLs for residential and commercial/industrial properties for a 2,3,7,8-TCDD toxicity equivalency quotient

according to the equations and rule provisions provided in §350.75.[for all three tiers is 1 part per billion (ppb) and for commercial/industrial properties for all three tiers is 5 ppb.]

(f) Polycyclic Aromatic Hydrocarbons.

(1) In calculating residential and commercial/industrial PCLs for all tiers, the person shall evaluate the following seven polycyclic aromatic hydrocarbons as carcinogens:

(A) benzo {a} anthracene;

(B) benzo {b} fluoranthene;

(C) benzo {k} fluoranthene;

(D) benzo {a} pyrene (B {a} P);

(E) chrysene;

(F) dibenzo {a, h} anthracene; and

(G) indeno {1, 2, 3-c, d} pyrene.

(2) The person shall use the relative potency factors outlined in the following figure to estimate cancer slope factors and unit risk estimates for each of the polycyclic aromatic hydrocarbons identified in paragraph (1) of this subsection for all exposure pathways (e.g., the soil ingestion, vegetable ingestion, inhalation, dermal contact with soil, and groundwater ingestion (in the absence of a primary MCL) exposure pathways):

Figure: 30 TAC §350.76(f)(2)

Relative Potency Factors (RPF) for Carcinogenic PAHs	
Compound	**RPF**
Benz{a}anthracene	0.1
Benzo{a}pyrene	1
Benzo{b}fluoranthene	0.1
Benzo{k}fluoranthene	0.01
Chrysene	0.001
Dibenz{a,h}anthracene	1
Indeno{1,2,3-c,d}pyrene	0.1

(3) The cancer slope factors and inhalation unit risk factors for the seven carcinogenic polycyclic aromatic hydrocarbons, shall be calculated according to the equations set forth in the following figure:

Figure: 30 TAC §350.76(f)(3)

Equations for Calculating Cancer Slope Factors and Unit Risk Factors for Carcinogenic PAHs	
$$SF_{PAH} = (SF_{B[a]P})\ (RPF_{PAH})$$	
where:	SF_{PAH} = adjusted cancer slope factor for a PAH $(mg/kg\text{-}day)^{-1}$ $SF_{B[a]P}$ = cancer slope factor for benzo{a}pyrene $(mg/kg\text{-}day)^{-1}$ RPF_{PAH} = relative potency factor for a PAH in Figure 30 TAC §350.76(f)(2) (unitless)
$$URF_{PAH} = (URF_{B[a]P})\ (RPF_{PAH})$$	
where:	URF_{PAH} = adjusted inhalation unit risk factor for a PAH $(\mu g/m^3)^{-1}$ $URF_{B[a]P}$ = inhalation unit risk factor for benzo{a}pyrene $(\mu g/m^3)^{-1}$ RPF_{PAH} = relative potency factor for a PAH in (Figure 30 TAC §350.76(f)(2)) (unitless)

(4) The person shall not apply the relative potency factor for any pathways when evaluating noncarcinogenic endpoints.

(5) For class 1 or 2 groundwater, the person shall establish PCLs according to the procedures in subparagraphs (A) and (B) of this paragraph.

(A) In evaluating residential and commercial/industrial exposures to class 1 and 2 groundwater for all tiers, the person shall use the most currently available primary MCL for benzo{a}pyrene as $^{GW}GW_{Ing}$ for benzo{a}pyrene.

(B) In establishing $^{GW}GW_{Ing}$ for class 1 and 2 groundwater for the six remaining carcinogenic polycyclic aromatic hydrocarbons, the person shall use the higher of the calculated $^{GW}RBEL_{Ing}$ or the primary MCL for B{a}P as $^{GW}GW_{Ing}$ for that specific polycyclic aromatic hydrocarbon. In the event that primary MCLs for the other carcinogenic polycyclic aromatic hydrocarbons become available, those MCLs would serve as $^{GW}GW_{Ing}$ for these compounds.

(g) Total Petroleum Hydrocarbons.

(1) The person shall follow the methodology prescribed by this subsection to establish PCLs for total petroleum hydrocarbons, unless the executive director approves the use of an alternate method.

(2) In order to establish PCLs for total petroleum hydrocarbons, the person shall establish PCLs for each of the aliphatic and aromatic hydrocarbon fractions listed in the following figure (e.g., aliphatic $>C_6$-C_8) for the mandatory and complete or reasonably anticipated to be completed exposure pathways as required in §350.71(c) of this title (relating to General Requirements):

Figure: 30 TAC §350.76(g)(2)

Hydrocarbon Fractions and Toxicity Factors

Aliphatic Hydrocarbon Fraction	Surrogate for Oral RfD	Surrogate for Inhalation RfC
C_6	n-hexane	n-hexane[1] commercial hexane[2]
$>C_6$-C_8	n-hexane	n-hexane[1] commercial hexane[2]
$>C_8$-C_{10}	C9-C17 aliphatics	dearomatized white spirits
$>C_{10}$-C_{12}	C9-C17 aliphatics	dearomatized white spirits
$>C_{12}$-C_{16}	C9-C17 aliphatics	dearomatized white spirits
$>C_{16}$-C_{21}	white mineral oils	----
$>C_{16}$-C_{21} (for transformer mineral oil releases only)	transformer mineral oil	----
$>C_{21-35}$[3]	white mineral oil	----
$>C_{21}$-C_{35} (for transformer mineral oil releases only)	transformer mineral oil	----
Aromatic Hydrocarbon Fraction	**Surrogate for Oral RfD**	**Surrogate for Inhalation RfC**
$>C_{7-8}$	ethylbenzene	ethylbenzene
$>C_8$-C_{10}	multiple aromatic compounds	high flash aromatic naphtha
$>C_{10}$-C_{12}	multiple aromatic compounds	high flash aromatic naphtha
$>C_{12}$-C_{16}	multiple aromatic compounds	multiple aromatic compounds
$>C_{16}$-C_{21}	pyrene	----
$>C_{21}$-C_{35}[3]	pyrene	----

Footnotes:

1. For mixtures with greater than 53% n-hexane content.
2. For mixtures with less than or equal to 53% n-hexane content.
3. The person may truncate the analysis at C_{28} when there does not appear to be significant mass of $>C_{28}$ based on the gas chromatogram and the product is anticipated to be a lighter hydrocarbon (e.g., gasoline, diesel, not transformer mineral oil, or used motor oil).

(3) The person shall use the specific toxicity factors for the specific surrogates as shown in the figure in paragraph (2) of this subsection for a hydrocarbon fraction. If a reference concentration is not available, then the person shall not be required to comply with §350.73(c) of this title (relating to Determination and Use of Human Toxicity Factors and Chemical Properties). The PCLs established under this subsection shall be based on noncarcinogenic effects.

(4) The person shall ensure that the PCLs established for each hydrocarbon fraction comply with the hazard quotient criteria as set forth in §350.72 of this title (relating to Carcinogenic Risk Levels and Hazard Indices for Human Health Exposure Pathways).

(5) The person shall ensure that the PCLs established for the total petroleum hydrocarbons comply with the hazard index criteria as set forth in §350.72 of this title considering only the hydrocarbon fractions as shown in the figure in paragraph (2) of this subsection. The person shall follow the methodology prescribed in §350.72(d) of this title to adjust the hydrocarbon fraction PCLs to meet the hazard index criteria for the total petroleum hydrocarbons.

(6) The person shall use an analytical method approved by the executive director to determine the concentration of the hydrocarbon fractions at the affected property.

(7) When the bulk total petroleum hydrocarbons composition can be assumed to be relatively consistent based on process knowledge, the person may establish mixture-specific (e.g., gasoline, diesel, transformer mineral oil, or other petroleum product) PCLs based on property-specific mixture compositions or mixture compositions considered to be representative of the mixture. The person shall comply with the other provisions of this subsection in the development of the mixture-specific PCLs, but the person shall be allowed to determine compliance with the mixture-specific total petroleum hydrocarbons PCL with a bulk total petroleum hydrocarbons analytical method acceptable to the executive director in lieu of analysis of the concentration of each hydrocarbon fraction.

(8) The PCLs established for each individual aliphatic and aromatic hydrocarbon fraction used to establish the mixture specific PCLs shall not exceed a hazard quotient of 1 and the mixture-specific PCL shall not exceed a hazard index of 10.

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

NOTICE OF PUBLIC HEARING ON PROPOSED REVISIONS TO 30 TAC CHAPTER 350

The Texas Commission on Environmental Quality (commission) will conduct a public hearing to receive testimony regarding proposed revisions to 30 Texas Administrative Code (TAC) Chapter 350, Texas Risk Reduction Program, Section 350.76 under requirements of Texas Health and Safety Code, §§361.017 and 361.024; Texas Water Code, §§5.102, 5.103, 5.105, and Chapter 26; and Texas Government Code, Chapter 2001, Subchapter B.

The proposed rulemaking would update the chemical-specific approaches used for developing and demonstrating attainment of the critical human health protective concentration levels (PCLs) for dioxins/furans and dioxin-like polychlorinated biphenyls (PCBs) contained in Section 350.76.

The commission will hold a hybrid virtual and in-person public hearing on this proposal in Austin on Monday, September ~~16~~30, 2024 at 9:00 a.m. in Building F, Room 2210 at the commission's central office located at 12100 Park 35 Circle. The hearing is structured for the receipt of oral or written comments by interested persons. Individuals may present oral statements when called upon in order of registration. Open discussion will not be permitted during the hearing; however, commission staff members will be available to discuss the proposal 30 minutes prior to the hearing.

Individuals who plan to attend the hearing virtually and want to provide oral comments and/or want their attendance on record must register by Thursday, September ~~12~~26, 2024. To register for the hearing, please email Rules@tceq.texas.gov and provide the following information: your name, your affiliation, your email address, your phone number, and whether or not you plan to provide oral comments during the hearing. Instructions for participating in the hearing will be sent on Friday, September ~~13~~27, 2024, to those who register for the hearing.

For the public who do not wish to provide oral comments but would like to view the hearing may do so at no cost at:

https://teams.microsoft.com/l/meetup-join/19%3ameeting_MzY3YmVhNjItZWIxOS00OWEyLWI5ZTgtZjYyY2NhNzcwNjg1%40thread.v2/0?context=%7b%22Tid%22%3a%22871a83a4-a1ce-4b7a-8156-3bcd93a08fba%22%2c%22Oid%22%3a%22e74a40ea-69d4-469d-a8ef-06f2c9ac2a80%22%7d

Persons who have special communication or other accommodation needs who are planning to attend the hearing should contact Sandy Wong, Office of Legal Services at (512) 239-1802 or 1-800-RELAY-TX (TDD). Requests should be made as far in advance as possible.

If you need translation services, please contact TCEQ at 800-687-4040. Si desea información general en español, puede llamar al 800-687-4040.

Written comments may be submitted to Gwen Ricco, MC 205, Office of Legal Services, Texas Commission on Environmental Quality, P.O. Box 13087, Austin, Texas 78711-3087, or faxed to *fax4808@tceq.texas.gov*. Electronic comments may be submitted at: *https://tceq.commentinput.com/*. File size restrictions may apply to comments being submitted via the TCEQ Public Comment system. All comments should reference Rule Project Number 2024-023-350-WS. The comment period opens on August ~~16~~30, 2024 and closes on ~~September 17~~October 1, 2024. Copies of the proposed rulemaking can be obtained from the commission's website at *https://www.tceq.texas.gov/rules/propose_adopt.html*. For further information, please contact Scott Settemeyer, Remediation Division, (512) 239-3429.

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

AGENDA ITEM REQUEST

for Proposed Rulemaking

AGENDA REQUESTED: July 31, 2024

DATE OF REQUEST: July 12, 2024

INDIVIDUAL TO CONTACT REGARDING CHANGES TO THIS REQUEST, IF NEEDED: Gwen Ricco, Rule/Agenda Coordinator, (512) 239-2678

CAPTION: Docket No. 2024-0837-RUL. Consideration for publication of, and hearing on, proposed amendment to 30 TAC Chapter 350, Texas Risk Reduction Program (TRRP) rule, Subchapter D, Development of Protective Concentration Levels, Section 350.76, Approaches for Specific Chemicals of Concern to Determine Human Health Protective Concentration Levels.

The proposed rulemaking would update the chemical-specific approaches used for developing and demonstrating attainment of the critical human health protective concentration levels (PCLs) for dioxins/furans and dioxin-like polychlorinated biphenyls (PCBs) contained in Section 350.76. (Scott Settemeyer, Michael Martinez; Rule Project No. 2024-023-350-WS)

Beth Seaton
Director

Merrie Smith
Division Deputy Director

Gwen Ricco
Agenda Coordinator

Copy to CCC Secretary? X NO YES

Texas Commission on Environmental Quality
Interoffice Memorandum

To: Commissioners **Date:** July 12, 2024

Thru: Laurie Gharis, Chief Clerk
Kelly Keel, Executive Director

From: Beth Seaton, Director
Office of Waste

Docket No.: 2024-0837-RUL

Subject: Commission Approval for Proposed Rulemaking
Chapter 350, Texas Risk Reduction Program
Staff-Recommended Updates to Protective Concentration Level Approaches for Dioxins/Furans and Dioxin-like Polychlorinated Biphenyls
Rule Project No. 2024-023-350-WS

Background and reason(s) for the rulemaking:

The Remediation Division proposes to amend 30 Texas Administrative Code (TAC) Chapter 350, Texas Risk Reduction Program (TRRP) rule §350.76, to update the chemical-specific approaches used for developing and demonstrating attainment of the critical human health protective concentration levels (PCLs) for dioxins/furans[1] and dioxin-like polychlorinated biphenyls (PCBs).

The dioxin/furan and dioxin-like PCB soil PCLs used for residential and commercial/industrial land use under TRRP, which are specified in the TRRP rule at §350.76(e)(3), need to be updated. The PCLs in the TRRP rule were based on a 1998 Environmental Protection Agency (EPA) policy memo (OSWER Directive 9200.4-26), which described an approach for addressing dioxin in soil. In 2012, EPA completed a reassessment of this approach and derived an updated reference dose for dioxin. At the time, TCEQ was concerned about EPA's updated reference dose. However, more recent evaluations now support the use of a reference dose in the range of the 2012 EPA value.

An additional consideration is that dioxins/furans and dioxin-like PCBs are mixtures of chemical compounds (congeners) with different toxicities. Section 350.76 of the TRRP rule uses toxicity equivalency factors (TEFs) to assess the relative toxicity of the individual congeners within a mixture of dioxins/furans and dioxin-like PCBs. The TEFs are applied to each measured congener and are summed to derive a total toxicity equivalency quotient (TEQ) to compare to a 2,3,7,8-tetrachlorodibenzodioxin (the most toxic congener) PCL. The TRRP rule provides specific TEFs for various dioxin/furan and dioxin-like PCB compounds and directs persons to use these TEF values when demonstrating attainment of the critical PCL.

When the TRRP rule was promulgated in 1999, the most recent TEF values established by the World Health Organization (WHO) in 1998 were listed in the rule. However, as science has evolved and more data has become available, WHO has updated the TEF values. EPA and other regulatory agencies have been using the 2005 WHO TEFs.

Therefore, the TRRP chemical-specific PCL approaches for dioxins/furans and dioxin-like PCBs need to be revised to reflect updated information on dioxin toxicity and address appropriate updates to the WHO TEFs for dioxins/furans and dioxin-like PCBs. Updating the rule would also provide TCEQ with the flexibility needed to evaluate the scientific defensibility, adoption, and use of alternative TEFs that have been derived after the TRRP rule was published in 1999.

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[1] The TRRP rule uses the term "Polychlorinated Dibenzo-p-Dioxins and Dibenzofurans". This interoffice memorandum refers to these compounds as "dioxins/furans."

Scope of the rulemaking:

The rulemaking would amend the chemical-specific approaches under §350.76(d) for dioxin-like PCBs and §350.76(e) for dioxins/furans and remove the figure in §350.76(d)(2)(B) containing TEFs for dioxins/furans and dioxin-like PCBs (referred to in the figure collectively as "Dioxin-Like Compounds"). Additionally, instead of specifying new TEFs in TRRP, the rulemaking would direct persons to use the most current final WHO TEFs that have been approved by TCEQ when determining a 2,3,7,8-TCDD TEQ. This would allow TCEQ and regulated entities to use more up-to-date values and retain flexibility in the TEFs to adapt to updated science in the future. The rulemaking would also include language that directs persons to use a TEF from any different source TCEQ determines to be most scientifically valid, an approach like that provided in §350.73(a)(7).

The rulemaking would also remove the residential and commercial/industrial dioxin/furan and dioxin-like PCB soil PCLs listed in §350.76(e)(3) and instead require PCLs for a 2,3,7,8-TCDD TEQ to be calculated according to the equations and rule provisions provided in §350.75.

A.) Summary of what the rulemaking would do:
The rulemaking would amend 30 Texas Administrative Code (TAC) Chapter 350, Texas Risk Reduction Program (TRRP) rule §350.76, to update the chemical-specific approaches used for developing and demonstrating attainment of the critical human health protective concentration levels (PCLs) for dioxins/furans[2] and dioxin-like polychlorinated biphenyls (PCBs).

B.) Scope required by federal regulations or state statutes:
The rulemaking is not required by federal regulations or state statute; rather it revises the PCL approaches used for dioxins/furans and dioxin-like PCBs based on updated toxicity information.

C.) Additional staff recommendations that are not required by federal rule or state statute:
Staff outlined all recommended changes above and do not propose further recommendations at this time.

Statutory authority:

- Texas Water Code (TWC), §5.102, which establishes the commission's general powers;
- TWC, §§5.103 and 5.105, which authorize the commission to adopt rules and policies necessary to carry out its powers and duties;
- TWC, §26.011, which authorizes the commission to administer the provisions of TWC, Chapter 26;
- TWC, §26.039, which states that activities which are inherently or potentially capable of causing or resulting in the spillage or accidental discharge of waste or other substances and which pose serious or significant threats of pollution are subject to reasonable rules establishing safety and preventative measures which the commission may adopt or issue;
- TWC, §26.121, which prohibits persons from discharging wastes into or adjacent to any water in the state unless authorized to do so and prohibits persons from engaging in any other activity which causes pollution of any water in the state;

[2] The TRRP rule uses the term "Polychlorinated Dibenzo-p-Dioxins and Dibenzofurans". This interoffice memorandum refers to these compounds as "dioxins/furans."

- TWC, §§26.262 and 26.264, which state it is the policy of this state to prevent the spill or discharge of hazardous substances into the waters in the state and authorizes the commission to issue rules to carry out the policy;
- TWC, §§26.341 and 26.345, which state it is the policy of this state to maintain and protect quality of groundwater and surface water resources from pollution from certain substances in underground and above-ground storage tanks and authorizes the commission to adopt rules to carry out the policy;
- TWC, §26.401, which states that it is the policy of this state that discharges of pollutants, disposal of wastes, or other activities subject to state regulation be conducted in a manner to maintain and not impair groundwater uses or pose a public health hazard, and that groundwater quality be restored if feasible;
- Texas Health & Safety Code (THSC), §§361.017 and 361.024, which establish the commission's jurisdiction over all aspects of the management of industrial solid waste and hazardous municipal waste with all power necessary or convenient to carry out the responsibilities of that jurisdiction and authorizes the commission to adopt rules; and
- THSC, Chapter 361, Subchapter F, which authorizes the commission to identify, assess, and remediate facilities that may constitute an imminent and substantial endangerment to public health and safety or the environment due to a release or threatened release of hazardous substances into the environment.

Effect on the:

A.) Regulated community:
The rulemaking will result in lower assessment and cleanup levels for regulated entities addressing dioxins/furans and dioxin-like PCBs currently and in the future, which could require the expenditure of additional time and costs to possibly implement an unplanned or more extensive remedy. However, the agency estimates that a comparatively small universe of sites will be impacted (i.e., fewer than 25 sites, mostly confined to the wood treating sector). In addition, it is possible that closed sites would need to be revisited if the lower PCL was deemed a substantial change in circumstance, or if an actual exposure to concentrations above the new PCLs needed to be addressed. While it is difficult to accurately estimate the additional costs that could be incurred, staff anticipate that these costs could vary depending on the extent of the contamination at a particular site and the selected or implemented remedy.

B.) Public:
The rulemaking will result in updated human health PCLs for dioxins/furans and dioxin-like PCBs and will allow TCEQ the flexibility to adapt to the latest science.

C.) Agency programs:
Some remediation programs, such as the Voluntary Cleanup, Corrective Action, and Superfund may require regulated entities to perform additional work to address releases of dioxins/furans and dioxin-like PCBs. Additionally, the costs for assessing and remediating impacted state-funded Superfund sites may increase. However, since the rulemaking would only affect a small number of state-funded Superfund sites, the program anticipates it would be able to absorb these additional costs within the existing budget.

Stakeholder meetings:

A public hearing will be held on Monday, September 16, 2024 during the public comment period (August 16, 2024 - September 17, 2024).

Public Involvement Plan

Yes. In addition to the statutory public notice requirements, TCEQ will develop a public involvement plan to encourage public participation. A plain language summary will also be provided.

Alternative Language Requirements

Yes. Notices will be provided in Spanish for this rulemaking. Persons planning to attend the public hearing may request translation services as needed.

Potential controversial concerns and legislative interest:

Amending the chemical-specific PCL approaches for dioxins/furans and dioxin-like PCBs in rule will result in lower PCLs for these chemicals, which could compel additional delineation and remediation requirements at sites affected by these chemicals. This could affect persons currently addressing these chemicals at remediation sites, potentially requiring unplanned expenditures of additional time, costs, and resources.

The TRRP rule requires persons to conduct additional assessment and remediation at sites where "…changes [in toxicity data] are of such magnitude to present an unacceptable threat to human health or the environment when the site is evaluated for future exposure conditions based on property-specific considerations" [30 TAC §350.35(e)]. Therefore, there may be concerns from regulated entities that have already completed approved response actions involving dioxins/furans or dioxin-like PCBs. As the agency becomes aware of these sites, there may be the need to re-evaluate them on a case-by-case basis.

Would this rulemaking affect any current policies or require development of new policies?
There are currently no policies or regulatory guidance regarding developing and demonstrating attainment of the critical PCLs for dioxins/furans and dioxin-like PCBs. However, with this rulemaking, guidance will be needed to provide clarification on which dioxins/furans and dioxin-like PCB congeners should be used to derive a 2,3,7,8-TCDD TEQ, the approved source(s) of TEFs, and the process for determining whether a response action is required.

What are the consequences if this rulemaking does not go forward? Are there alternatives to rulemaking?

Without this rule change, the TCEQ must continue to use the outdated 1998 TEFs.The existing framework of the rule provides chemical-specific PCL approaches for dioxins/furans and dioxin-like PCBs, and they could continue being addressed as they have been for the past 25 years. However, based on updated science, the cleanup levels for dioxins/furans and dioxin-like PCBs in soil should be lower than the PCLs currently used by TCEQ.

An alternative would be to adopt the 2005 WHO TEFs to replace the outdated TEFs in TRRP (WHO 1998). The agency could also adopt soil PCLs directly as published by EPA in their regional screening levels (RSLs) tables, using the TCEQ specific risk and hazard values. This would make it clear what PCLs and TEFs would apply for regulated entities, but would leave TCEQ with little to no flexibility in choosing appropriate updated toxicity factors, PCLs or TEFs.

Key points in the proposal rulemaking schedule:
Anticipated proposal date: July 31, 2024
Anticipated *Texas Register* publication date: August 16, 2024
Anticipated public hearing date: September 16, 2024

Re: Docket No. 2024-0837-RUL

Anticipated public comment period: August 16, 2024 - September 17, 2024
Anticipated adoption date: December 18, 2024

Agency contacts:
Scott Settemeyer, Rule Project Manager, Remediation Division, (512) 239-3429
Michael Martinez, Staff Attorney, Environmental Law Division, (512) 239-5771
Gwen Ricco, Texas Register Rule/Agenda Coordinator, General Law Division, (512) 239-2678

cc: Chief Clerk, 2 copies
Executive Director's Office
Jim Rizk
Jessie Powell
Krista Kyle
Office of General Counsel
Scott Settemeyer
Michael Martinez
Gwen Ricco

Texas Commission on Environmental Quality (TCEQ)
May 9, 2024

Plain Language Summary of Proposed Rules for Updating the Texas Risk Reduction Program (TRRP) Rules

Introduction

The proposed rule revision would modify 30 Texas Administrative Code (TAC) Chapter 350, Texas Risk Reduction Program (TRRP) rule §350.76. The first part of the proposed revision will update the critical human health protective concentration levels (PCLs) for polychlorinated dibenzo-p-dioxins and dibenzofurans ("dioxins/furans") and dioxin-like polychlorinated biphenyls (PCBs). These PCLs represent safe levels for chemicals in soil and serve as the cleanup levels for sites entered in Remediation Division programs under TRRP. The current values in TRRP are now considered outdated in light of the most recent scientific data. More recent evaluations support the use of a newer reference dose; therefore, the TCEQ proposes to amend TRRP §350.76 to remove the outdated policy values and update dioxin/furan and dioxin-like PCB calculations for soil PCLs used for residential and commercial/industrial land use.

Additionally, TRRP §350.76 provides specific toxicity equivalency factors (TEFs) for dioxin/furan and dioxin-like PCB compounds to be used when demonstrating attainment of the critical PCL. The proposed rule revision would remove the TEFs based on the 1998 World Health Organization values from the TRRP rule and bring the TEFs in line with current accepted science.

Summary of Proposed Rule Amendment

The proposed rulemaking (Project No. 2024-023-350-WS) would amend 30 TAC §350.76 to update the chemical-specific approaches used for developing and demonstrating attainment of the critical human health PCLs for dioxins/furans and dioxin-like PCBs.

Public Comment and Hearing Information

The commission will offer a hybrid in-person and virtual public hearing on the proposed rules. The hearing will be held in Austin on Monday, September 16, 2024, at 9:00 a.m. in Building F, Room 2210, at the commission's central office located at 12100 Park 35 Circle. Individuals who plan to attend the hearing virtually and want to provide oral comments must register by Thursday, September 12, 2024. To register, please email Rules@tceq.texas.gov and provide the following information: your name, your affiliation, your email address, your phone number, and whether or not you plan to provide oral comments during the hearing. Instructions for participating in the hearing will be sent on Friday, September 13, 2024, to those who register for the hearing.

Members of the public who do not wish to provide oral comments but would like to view the hearing virtually may do so at no cost at:

https://teams.microsoft.com/l/meetup-join/19%3ameeting_MzY3YmVhNjItZWIxOS00OWEyLWI5ZTgtZjYyY2NhNzcwNjg1%40thread.v2/0?context=%7b%22Tid%22%3a%22871a83a4-a1ce-4b7a-8156-3bcd93a08fba%22%2c%22Oid%22%3a%22e74a40ea-69d4-469d-a8ef-06f2c9ac2a80%22%7d

The purpose of the hearing will be to receive public comments on the TRRP § 350.76 rulemaking proposal (Project No. 2024-023-350-WS). The hearing will be conducted in English. Language interpretation services may be requested. For accommodation needs, contact Sandy Wong, Office of Legal Services at (512) 239-1802 or 1-800-RELAY-TX (TDD) as far in advance as possible.

The comment period for these proposed actions opens on August 16, 2024, and closes at 11:59 p.m. on September 17, 2024. Submit written comments through the TCEQ Public Comments system at *https://tceq.commentinput.com/comment/search*. Comments must reference Rule Project Number **2024-023-350-WS**.

Copies of the proposed rules can be found on the TCEQ's website at *https://www.tceq.texas.gov/rules/propose_adopt.html*.

For more information about the proposals or to get help with submitting written comments, contact Scott Settemeyer, Rule Project Manager, (512) 239-2439 or scott.settemeyer@tceq.texas.gov.

Comisión de Calidad Ambiental de Texas (TCEQ)
9 de mayo de 2024

Resumen en Lenguaje Sencillo de las Normas Propuestas para Actualizar las Normas del Programa de Reducción de Riesgos de Texas (TRRP)

Introducción

La revisión de la norma propuesta modificaría el Capítulo 350 del Código Administrativo de Texas (TAC) Sección 350.76 de la norma del Programa de Reducción de Riesgos de Texas (TRRP). La primera parte de la revisión propuesta actualizará los niveles críticos de concentración protectora para la salud humana (PCLs) para dibenzo-p-dioxinas y dibenzofuranos policlorados ("dioxinas/furanos") y bifenilos policlorados similares a las dioxinas (PCBs). Estos PCLs representan niveles seguros para los químicos en el suelo y sirven como niveles de limpieza para los sitios ingresados en los programas de la División de Remediación bajo el TRRP. Los valores actuales en el TRRP ahora se consideran desactualizados a la luz de los datos científicos más recientes. Evaluaciones más recientes respaldan el uso de una dosis de referencia más nueva; por lo tanto, la TCEQ propone enmendar la Sección 350.76 del TRRP para eliminar los valores de política desactualizados y actualizar los cálculos de dioxinas/furanos y PCBs similares a las dioxinas para los PCLs del suelo utilizados para uso residencial y comercial/industrial.

Además, la Sección 350.76 del TRRP proporciona factores específicos de equivalencia de toxicidad (TEFs) para compuestos de dioxinas/furanos y PCBs similares a las dioxinas que se utilizarán al demostrar el cumplimiento del PCL crítico. La revisión de la norma propuesta eliminaría los TEFs basados en los valores de la Organización Mundial de la Salud de 1998 de la norma TRRP y alinearía los TEFs con la ciencia aceptada actualmente.

Resumen de la Enmienda Propuesta a la Norma

La reglamentación propuesta (Proyecto No. 2024-023-350-WS) enmendaría la Sección 350.76 del TAC para actualizar los enfoques específicos de los químicos utilizados para desarrollar y demostrar el cumplimiento de los PCLs críticos para la salud humana para las dioxinas/furanos y PCBs similares a las dioxinas.

Información sobre Comentarios Públicos y Audiencia

La comisión ofrecerá una audiencia pública híbrida en persona y virtual sobre las normas propuestas. La audiencia se llevará a cabo en Austin el lunes 16 de septiembre de 2024 a las 9:00 a.m. en el Edificio F, Sala 2210, en la oficina central de la comisión ubicada en 12100 Park 35 Circle. Las personas que planeen asistir a la audiencia virtualmente y deseen proporcionar comentarios orales deben registrarse antes del jueves 12 de septiembre de 2024. Para registrarse, envíe un correo electrónico a Rules@tceq.texas.gov y proporcione la siguiente información: su nombre, su afiliación, su dirección de correo electrónico, su número de teléfono y si planea o no proporcionar comentarios orales durante la audiencia. Las instrucciones para participar en la audiencia se enviarán el viernes 13 de septiembre de 2024 a aquellos que se registren para la audiencia. Los miembros del público que no deseen proporcionar comentarios orales pero deseen ver la audiencia virtualmente pueden hacerlo sin costo alguno en:

https://teams.microsoft.com/l/meetup-join/19%3ameeting_MzY3YmVhNjItZWIxOS00OWEyLWI5ZTgtZjYyY2NhNzcwNjg1%40thread.v2/

0?context=%7b%22Tid%22%3a%22871a83a4-a1ce-4b7a-8156-3bcd93a08fba%22%2c%22Oid%22%3a%22e74a40ea-69d4-469d-a8ef-06f2c9ac2a80%22%7d

El propósito de la audiencia será recibir comentarios públicos sobre la propuesta de reglamentación de la Sección 350.76 del TRRP (Proyecto No. 2024-023-350-WS). La audiencia se llevará a cabo en inglés. Se pueden solicitar servicios de interpretación de idiomas. Para necesidades de acomodación, contacte a Sandy Wong, Oficina de Servicios Legales, al (512) 239-1802 o al 1-800-RELAY-TX (TDD) con la mayor anticipación posible.

Si desea información general en español, puede llamar al 800-687-4040.

El período de comentarios para estas acciones propuestas comienza el 16 de agosto de 2024 y cierra a las 11:59 p.m. del 17 de septiembre de 2024. Envíe comentarios por escrito a través del sistema de Comentarios Públicos de TCEQ en https://tceq.commentinput.com/comment/search. Los comentarios deben referirse al Número del Proyecto de Norma 2024-023-350-WS.

Copias de las normas propuestas se pueden encontrar en el sitio web de la TCEQ en https://www.tceq.texas.gov/rules/propose_adopt.html. Para más información sobre las propuestas o para obtener ayuda con el envío de comentarios por escrito, contacte a Scott Settemeyer, Gerente del Proyecto de Norma, al (512) 239-2439 o scott.settemeyer@tceq.texas.gov.

The Texas Commission on Environmental Quality (TCEQ, agency, or commission) proposes amendments to §350.76.

Background and Summary of the Factual Basis for the Proposed Rules

The purpose of this rulemaking is to amend 30 Texas Administrative Code (TAC) Chapter 350, Texas Risk Reduction Program (TRRP) rule §350.76, pertaining to the chemical-specific approaches used for developing and demonstrating attainment of the critical human health protective concentration levels (PCLs) for dioxins/furans and dioxin-like polychlorinated biphenyls (PCBs).

TCEQ proposes to update the approach for developing soil PCLs for dioxins/furans and dioxin-like PCBs used for residential and commercial/industrial land use under TRRP. The current approach is covered in the TRRP rule in §350.76(d) and §350.76(e), and the current PCLs are specified in the TRRP rule at §350.76(e)(3). The PCLs contained in the existing TRRP rule were based on a then-current 1998 United States Environmental Protection Agency (EPA) policy memo (OSWER Directive 9200.4-26), which described an approach for addressing dioxins in soil. Since that time, the EPA completed a reassessment of this approach and derived an updated reference dose for dioxins. Based on more recent scientific evaluations, TCEQ can support the use of a reference dose in the range of EPA's updated value, and that value will be reflected in the approach provided in this proposed rule revision. Upon the effective date of the

adopted revisions, any activity conducted pursuant to TRRP must comply with the revised approach for developing dioxins/furans and dioxin-like PCBs and the soil PCLs used for residential and commercial/industrial land use under TRRP.

Additionally, the proposed rule revision updates the toxicity equivalency factors (TEFs) related to dioxins/furans and dioxin-like PCBs contained in §350.76(d)(2)(B). Dioxins/furans and dioxin-like PCBs are mixtures of chemical compounds (congeners) with different toxicities. TRRP §§350.76(d) and (e) use TEFs to assess the relative toxicity of the individual congeners compared to the toxicity of the most toxic congener, 2,3,7,8-tetrachlorodibenzodioxin (2,3,7,8-TCDD), within a mixture of dioxins/furans and dioxin-like PCBs. The TEFs are applied as a multiplier of the concentration of each measured congener to calculate a 2,3,7,8-TCDD toxicity equivalency quotient (TEQ) concentration. The resulting 2,3,7,8-TCDD TEQ concentrations for each congener are summed to derive a total 2,3,7,8-TCDD TEQ concentration for the entire mixture. The total 2,3,7,8-TCDD TEQ concentration is then compared to a 2,3,7,8-TCDD PCL to determine the nature and extent of contamination and whether a remedy is required. The TRRP rule provides specific TEFs for various dioxins/furans and dioxin-like PCB compounds and directs persons to use these TEF values when demonstrating attainment of the critical PCL.

When the TRRP rule was promulgated in 1999, the most recent TEF values established

by the World Health Organization (WHO) in 1998 were listed in the rule. However, based on evolving science and current data, WHO updated the TEF values in 2005 and continues to develop the most current TEF values. EPA and other regulatory agencies have been using the 2005 WHO TEFs. The proposed TRRP §350.76 rule revision will allow cleanups being conducted under TRRP to adopt the most recent TEFs that the executive director determines are appropriate based on current science. Upon the effective date of the adopted revisions, any activity conducted pursuant to TRRP must comply with the latest TEFs that have been reviewed and approved by the executive director from an authoritative source (e.g., WHO or another scientifically credible source) for dioxin-like PCBs and dioxins/furans.

The TRRP chemical-specific PCL approaches for dioxins/furans and dioxin-like PCBs need to be revised to reflect updated information on dioxin toxicity and address appropriate updates to the WHO TEFs for dioxins/furans and dioxin-like PCBs. Updating the rule will also provide TCEQ with the flexibility needed to evaluate and adopt alternative TEFs that have been derived since the TRRP rule was first adopted in 1999.

Section by Section Discussion

Subchapter D: Development of Protective Concentration Levels

The commission proposes to amend §350.76(d)(2)(B) by removing the figure and the

directive for persons to use TEFs specified therein when determining a 2,3,7,8-TCDD TEQ for dioxin-like PCBs. The proposed rule would direct persons to apply the latest TEFs that have been reviewed and approved by the executive director. This subsection is also revised to include language that the person shall use guidance provided by the executive director for determining the constituents considered to be dioxin-like PCBs that must be evaluated, including the process by which they should be evaluated.

The commission proposes to add new subsection §350.76(d)(3). This subsection clarifies that a person may be required to evaluate the adequacy of a response action when the executive director determines that a substantial change in the TEFs alters the calculated TEQ in such a way that results in the actual toxicity of the dioxin-like PCB mixture not being protective of human health and the environment. The rule also specifies that it is possible that a person might not be required to conduct a response action in the case where a significant change in the TEFs affects the TEQ in such a way that reveals a response action is no longer warranted to protect human health and the environment. To maintain the numerical order of the rule, previous subsections (d)(3) and (d)(4) are being renumbered to (d)(4) and (d)(5), respectively.

The commission proposes to amend §350.76(e)(1) by removing the directive for persons to use TEFs specified in the figure included in subsection (d)(2)(B), when demonstrating attainment of the critical PCL for 2,3,7,8-TCDD. The proposed rule

would direct persons to apply the latest TEFs that have been reviewed and approved by the executive director. This subsection is also revised to include language that the person shall use guidance provided by the executive director for determining the constituents considered to be dioxins and furans that must be evaluated, including the process by which they should be evaluated.

The commission proposes to amend §350.76(e)(1)(B) to clarify that, when homologue-specific analytical data are available, persons shall apply the latest TEFs that have been reviewed and approved by the executive director. Additionally, this subsection clarifies that if a homologue class has more than one TEF for different congeners, persons shall use the highest of the latest TEFs that have been reviewed and approved by the executive director for that congener class. This subsection is also revised to include language that the person shall use guidance provided by the executive director for determining the constituents considered to be dioxins and furans that must be evaluated, including the process by which they should be evaluated. Additionally, the proposed rule removes the language specifying that a TEF value of 0.5 be used for the pentachlorodibenzofuran homologue class.

The commission proposes to amend §350.76(e)(1)(C) to clarify that, when congener-specific analytical data are available, persons shall apply the latest TEFs that have been reviewed and approved by the executive director. This subsection is also revised to

include language that the person shall use guidance provided by the executive director for determining the constituents considered to be dioxins and furans that must be evaluated, including the process by which they should be evaluated.

The commission proposes to add new subsection §350.76(e)(1)(D). This subsection clarifies that a person may be required to evaluate the adequacy of a response action when the executive director determines that a substantial change in the TEFs alters the calculated TEQ in such a way that it results in the actual toxicity of the dioxin and furan mixture not being protective of human health and the environment. The rule also specifies that it is possible that a person might not be required to conduct a response action in the case where a significant change in the TEFs affects the TEQ in such a way that reveals a response action is no longer warranted to protect human health and the environment.

The commission proposes to amend §350.76(e)(3) by removing language that establishes the critical soil PCL for residential properties for all three tiers as 1 part per billion (ppb) and for commercial/industrial properties for all three tiers as 5 ppb. The proposed rule would specify that the critical soil PCLs for residential and commercial/industrial properties shall be calculated for a 2,3,7,8-TCDD TEQ according to the equations and rule provisions provided in §350.75.

Fiscal Note: Costs to State and Local Government

Kyle Girten, Analyst in the Budget and Planning Division, has determined that for the first five-year period the proposed rules are in effect, fiscal implications are anticipated for TCEQ and potentially a local governmental entity as a result of administration or enforcement of the proposed rule. Implementation of amendments to the proposed rule in §350.76 are anticipated to result in increased costs for the assessment and remediation of a small number of sites whose remediation is managed and funded by TCEQ and/or a municipality. The rulemaking is not anticipated to result in fiscal implications for other state or local governmental entities.

Costs for sample collection, laboratory analysis, and data analysis are anticipated to increase for these sites when they are being assessed. Given that this rulemaking will result in lower assessment levels for dioxins/furans and dioxin-like PCBs in soil, an increased number of samples would need to be collected at sites to delineate the horizontal and vertical extent of contamination. Laboratory analysis costs for these parameters could also increase significantly because laboratories would be required to use analytical methods that can meet the required level of performance based on the lowered PCL. Costs for remediation are also anticipated to increase because greater volumes of soil may need to be remediated to the lower PCLs.

Costs cannot be estimated because they will vary depending on the extent of

contamination that is found and the remedy (e.g., excavation, capping, in-situ treatment) that is implemented; however, it is anticipated that any cost increases can be addressed at current appropriation levels.

Public Benefits and Costs

Mr. Girten determined that for each year of the first five years the proposed rules are in effect, the public benefit will be increased consistency with the latest science. Specifically, the critical soil PCLs for 2,3,7,8-TCDD and the approach for developing dioxin/furan and dioxin-like PCB soil PCLs would be implemented in a manner consistent with the latest scientific evaluations from EPA and other regulatory agencies.

This rulemaking is anticipated to result in increased costs for the assessment and remediation by responsible or other performing parties at a small number of sites. In addition, it is possible that closed sites may need to be revisited if a lower soil PCL was determined to be a substantial change in circumstance, or if risks of exposure to concentrations of dioxins/furans and dioxin-like PCBs above new soil PCLs needed to be addressed.

Costs for sample collection, laboratory analysis, and data analysis may increase for these sites when they are being assessed. Given that this rulemaking will result in

lower assessment levels for dioxins/furans and dioxin-like PCBs in soil, an increased number of samples may need to be collected at sites to delineate the horizontal and vertical extent of contamination. Laboratory analysis costs for these parameters could also increase significantly because laboratories would be required to use analytical methods that can meet the required level of performance based on the lowered PCL. Costs for remediation may also increase as greater volumes of soil may need to be remediated because of the lower assessment levels and soil PCLs.

Costs cannot be estimated because they will vary depending on the extent of contamination that is found and the remedy (e.g., excavation, capping, in-situ treatment) that is implemented.

Local Employment Impact Statement

The commission reviewed this proposed rulemaking and determined that a Local Employment Impact Statement is not required because the proposed rulemaking does not adversely affect a local economy in a material way for the first five years that the proposed rule is in effect.

Rural Communities Impact Assessment

The commission reviewed this proposed rulemaking and determined that the proposed rulemaking does not adversely affect rural communities in a material way for the first

five years that the proposed rules are in effect. The amendments would apply statewide and have the same effect in rural communities as in urban communities.

Small Business and Micro-Business Assessment

No adverse fiscal implications are anticipated for small or micro-businesses due to the implementation or administration of the proposed rule for the first five-year period the proposed rules are in effect.

Small Business Regulatory Flexibility Analysis

The commission reviewed this proposed rulemaking and determined that a Small Business Regulatory Flexibility Analysis is not required because the proposed rule does not adversely affect a small or micro-business in a material way for the first five years the proposed rules are in effect.

Government Growth Impact Statement

The commission prepared a Government Growth Impact Statement assessment for this proposed rulemaking. The proposed rulemaking does not create or eliminate a government program and will not require an increase or decrease in future legislative appropriations to the agency. The proposed rulemaking does not require the creation of new employee positions, eliminate current employee positions, nor require an increase or decrease in fees paid to the agency. The proposed rulemaking amends an

existing regulation, and it does not create, expand, repeal, or limit this regulation. The proposed rulemaking does not increase or decrease the number of individuals subject to its applicability. During the first five years, the proposed rule should not impact positively or negatively the state's economy.

Draft Regulatory Impact Analysis Determination

The commission reviewed the proposed rulemaking in light of the regulatory analysis requirements of the Texas Government Code, §2001.0225. The commission determined that the action is not subject to Texas Government Code, §2001.0225, because it does not meet the definition of a "major environmental rule" as defined in that statute. A "major environmental rule" is a rule, the specific intent of which is to protect the environment or reduce risks to human health from environmental exposure, and that may adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, or the public health and safety of the state or a sector of the state.

The specific intent of the proposed rule is to adjust TRRP §350.76 methods and measures related to dioxins/furans and dioxin-like PCBs to align with current accepted science. Specifically, the proposed rule would revise the dioxin/furan and dioxin-like PCB soil PCLs used for residential and commercial/industrial land use under TRRP and update TEFs related to dioxins/furans and dioxin-like PCBs contained in §350.76 in

light of more recent scientific evaluation, evolving science, and current data. The proposed rule is not expected to adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, or the public health and safety of the state or a sector of the state. Instead, the proposed rule may affect the costs and timeliness of cleanups of those sites where dioxins/furans or dioxin-like PCBs are the subject of investigation or remediation pursuant to TRRP. The proposed amendments do not rise to the level of material, but instead are limited to incorporating modifications to the current regulatory framework based on current science and data regarding dioxins/furans and dioxin-like PCBs. Therefore, the proposed rulemaking does not meet the definition of a major environmental rule.

Furthermore, even if the proposed rulemaking did meet the definition of a major environmental rule, the proposed rules do not meet any of the four applicability requirements listed in Texas Government Code, §2001.0225. Section 2001.0225 applies to a major environmental rule, the result of which is to: exceed a standard set by federal law, unless the rule is specifically required by state law; exceed an express requirement of state law, unless the rule is specifically required by federal law; exceed a requirement of a delegation agreement or contract between the state and an agency or representative of the federal government to implement a state and federal program; or adopt a rule solely under the general powers of the agency instead of under a specific state law. The proposed rulemaking does not meet any of the four applicability

requirements listed in Texas Government Code, §2001.0225.

First, the rulemaking does not exceed a standard set by federal law. Second, the rulemaking does not propose requirements that are more stringent than existing state laws. Third, the proposed rulemaking does not exceed a requirement of a delegation agreement or contract between the state and an agency or representative of the federal government, where the delegation agreement or contract is to implement a state and federal program. Fourth, this rulemaking does not seek to adopt a rule solely under the general powers of the agency. Rather, sections of the TWC, Chapter 26, and THSC, Chapter 361, authorize this rulemaking, which are cited in the Statutory Authority section of this preamble.

The commission invites public comment regarding the Draft Regulatory Impact Analysis Determination during the public comment period. Written comments on the Draft Regulatory Impact Analysis Determination may be submitted to the contact person at the address listed under the Submittal of Comments section of this preamble.

Takings Impact Assessment

The commission evaluated the proposed rules and performed analysis of whether the

proposed rules constitute a taking under Texas Government Code, Chapter 2007. The specific purpose of the proposed rules is to adjust TRRP §350.76 methods and measures related to dioxins/furans and dioxin-like PCBs to align with current accepted science. The proposed rules would substantially advance this stated purpose by revising the soil PCLs and updating the TEFs related to these constituents.

Promulgation and enforcement of these proposed rules would be neither a statutory nor a constitutional taking of private real property. Specifically, the subject proposed regulations do not affect a landowner's rights in private real property because this rulemaking does not burden (constitutionally); nor restrict or limit the owner's right to property and reduce its value by 25% or more beyond that which would otherwise exist in the absence of the regulations. In other words, the proposed rules will not burden private real property because they incorporate modifications to the current regulatory framework based on current science and data regarding dioxins/furans and dioxin-like PCBs.

Consistency with the Coastal Management Program

This rulemaking is not applicable to the Coastal Management Program.

Announcement of Hearing

The commission will hold a hold a hybrid virtual and in-person public hearing on this

proposal in Austin on Monday, September 16, 2024, at 9 a.m. in Building F, Room 2210 at the commission's central office located at 12100 Park 35 Circle. The hearing is structured for the receipt of oral or written comments by interested persons. Individuals may present oral statements when called upon in order of registration. Open discussion will not be permitted during the hearing; however, commission staff members will be available to discuss the proposal 30 minutes prior to the hearing.

Individuals who plan to attend the hearing virtually and want to provide oral comments and/or want their attendance on record must register by Thursday, September 12, 2024. To register for the hearing, please email Rules@tceq.texas.gov and provide the following information: your name, your affiliation, your email address, your phone number, and whether or not you plan to provide oral comments during the hearing. Instructions for participating in the hearing will be sent on Friday, September 13, 2024, to those who register for the hearing.

For the public who do not wish to provide oral comments but would like to view the hearing may do so at no cost at:

https://teams.microsoft.com/l/meetup-join/19%3ameeting_MzY3YmVhNjItZWIxOS00OWEyLWI5ZTgtZjYyY2NhNzcwNjg1%40thread.v2/0?context=%7b%22Tid%22%3a%22871a83a4-a1ce-4b7a-8156-3bcd93a08fba%22%2c%22Oid%22%3a%22e74a40ea-69d4-469d-a8ef-06f2c9ac2a80%22%7d

Persons who have special communication or other accommodation needs who are

planning to attend the hearing should contact Sandy Wong, Office of Legal Services at (512) 239-1802 or 1-800-RELAY-TX (TDD). Requests should be made as far in advance as possible.

Submittal of Comments

Written comments may be submitted to Gwen Ricco, MC 205, Office of Legal Services, Texas Commission on Environmental Quality, P.O. Box 13087, Austin, Texas 78711-3087, or faxed to *fax4808@tceq.texas.gov*. Electronic comments may be submitted at: https://tceq.commentinput.com/comment/search. File size restrictions may apply to comments being submitted via the TCEQ Public Comments system. All comments should reference Rule Project Number 2024-023-350-WS. The comment period opens on August 16, 2024, and closes at 11:59 p.m. on September 17, 2024. Please choose one of the methods provided to submit your written comments.

Copies of the proposed rulemaking can be obtained from the commission's website at *https://www.tceq.texas.gov/rules/propose_adopt.html*. For further information, please contact Scott Settemeyer, Rule Project Manager, Remediation Division, 512-239-3429.

SUBCHAPTER D: DEVELOPMENT OF PROTECTIVE CONCENTRATION LEVELS

§350.76

Statutory Authority

The rule change is proposed under the authority of Texas Water Code (TWC), §5.102, concerning general powers of the commission; TWC, §5.103, which authorizes the commission to adopt any rules necessary to carry out its power and duties; TWC, §5.105, which authorizes the commission to establish and approve all general policy of the commission by rule; TWC, §26.011, which authorizes the commission to administer the provisions of TWC, Chapter 26; TWC, §26.039, which states that activities which are inherently or potentially capable of causing or resulting in the spillage or accidental discharge of waste or other substances and which pose serious or significant threats of pollution are subject to reasonable rules establishing safety and preventative measures which the commission may adopt or issue; TWC, §26.121, which prohibits persons from discharging wastes into or adjacent to any water in the state unless authorized to do so and prohibits persons from engaging in any other activity which causes pollution of any water in the state; TWC, §§26.262 and 26.264, which state it is the policy of this state to prevent the spill or discharge of hazardous substances into the waters in the state and authorizes the commission to issue rules to carry out the policy; TWC, §§26.341 and 26.345, which state it is the policy of this state to maintain and protect quality of groundwater and surface water resources from pollution from certain substances in underground and above-ground storage tanks and

authorizes the commission to adopt rules to carry out the policy; TWC, §26.401, which states that it is the policy of this state that discharges of pollutants, disposal of wastes, or other activities subject to state regulation be conducted in a manner to maintain and not impair groundwater uses or pose a public health hazard, and that groundwater quality be restored if feasible; Texas Health & Safety Code (THSC), §§361.017 and 361.024, which establish the commission's jurisdiction over all aspects of the management of industrial solid waste and hazardous municipal waste with all power necessary or convenient to carry out the responsibilities of that jurisdiction and authorizes the commission to adopt rules; and THSC, Chapter 361, Subchapter F, which authorizes the commission to identify, assess, and remediate facilities that may constitute an imminent and substantial endangerment to public health and safety or the environment due to a release or threatened release of hazardous substances into the environment.

The proposed rules implement TWC, Chapter 26, and THSC, Chapter 361.

§350.76. Approaches for Specific Chemicals of Concern to Determine Human Health Protective Concentration Levels.

(a) General.

(1) Due to the unique nature of the toxicity and/or exposure, the person shall use the COC-specific approaches described in this section for the following COCs:

(A) cadmium;

(B) lead;

(C) polychlorinated biphenyls;

(D) polychlorinated dibenzodioxins and dibenzofurans;

(E) polycyclic aromatic hydrocarbons; and

(F) total petroleum hydrocarbons.

(2) Except for the specific provisions contained in this section, the person shall establish RBELs and PCLs in accordance with the standard procedures outlined in the previous sections of this subchapter.

(3) This section addresses only those exposure pathways for which PCL equations are provided in this subchapter. When dealing with other exposure pathways as required in §350.71(c) of this title (relating to General Requirements), the executive director will specify how those pathways should be addressed for these COCs using the best available science.

(4) The person shall use the figures as required in subsections (b) - (g) of this section.

(b) Cadmium.

(1) In calculating residential soil PCLs that are protective for noncarcinogenic effects for all tiers, the person shall incorporate age-adjusted exposure assumptions for the soil ingestion, vegetable ingestion, and dermal soil exposure pathways. Accordingly, 30 years of cadmium exposure shall be partitioned into three specific exposure periods: <1 - 6 years, 6 - 18 years, and 18 - 30 years. Cadmium intake shall be calculated for each of these periods, based on the period-specific exposure assumptions. The soil PCL for cadmium shall be a function of the final integrated intake estimate, which shall be determined by time-weighting intake from each of the three exposure periods. The age-adjusted RBEL equations and default parameters to be used for cadmium are provided in the following figure. The soil PCL

for cadmium shall be calculated by combining the pathway-specific PCLs as outlined in §350.75(i)(6) of this title (relating to Tiered Human Health Protective Concentration Level Evaluation).

Figure: 30 TAC §350.76(b)(1)

Age-Adjusted RBEL Equations and Default Exposure Factors for Evaluating the Noncarcinogenic Effects of Cadmium Residential Land Use

Dermal Contact with Non-Carcinogenic COCs in Soil - RBEL (mg/kg)

$$^{Soil}RBEL_{Derm\text{-}nc} = \frac{HQ \times RfD_d \times AT.AgeAdj.res \times 365\ days/yr}{10^{-6}\ kg/mg \times EF.res \times DF.adj \times ABS.d}$$

Ingestion of Non-Carcinogenic COCs in Soil - RBEL (mg/kg)

$$^{Soil}RBEL_{Ing\text{-}nc}(mg/kg) = \frac{HQ \times RfD_o \times AT.AgeAdj.res \times 365\ days/yr}{10^{-6}\ kg/mg \times EF.res \times IRsoil.AgeAdj.res \times RBAF}$$

Ingestion of Non-Carcinogenic COCs in Above-Ground Vegetables - RBEL (mg/kg)

$$^{Abg}RBEL_{Ing\text{-}nc} = \frac{HQ \times RfD_o \times AT.AgeAdj.res \times 365\ day/yr}{EF.res \times IRabg.AgeAdj.res}$$

Ingestion of Non-Carcinogenic COCs in Below-Ground Vegetables - RBEL (mg/kg)

$$^{Bg}RBEL_{Ing\text{-}nc} = \frac{HQ \times RfD_o \times AT.AgeAdj.res \times 365\ day/yr}{EF.res \times IRbg.AgeAdj.res}$$

HQ	Hazard Quotient (unitless)	1
AT.AgeAdj.res	Averaging Time - (yr)-Age-adjusted	30
RfD_o	Oral Reference Dose (mg/kg-day)	Chemical Specific
RfD_d	Dermal Reference Dose (mg/kg-day)	Chemical Specific
EF.res	Exposure Frequency (days/yr) (event/yr for dermal soil)	350
DF.adj	Dermal Adjustment Factor (mg-yr/kg-event)	352
ABS.d	Dermal Absorption Fraction (unitless)	Chemical Specific

Irsoil.AgeAdj.res	Age-Adjusted Soil Ingestion Rate (mg-yr/kg-day)	120
	Age-Adjusted Vegetable Ingestion Rate (kg-yr/kg-day)	
IRabg.AgeAdj.res	Above-Ground Vegetables	0.0028
IRbg.AgeAdj.res	Below-Ground Vegetables	0.0012
RBAF	Relative Bioavailability Factor	1

(2) In calculating residential and commercial/industrial soil PCLs for all tiers, the person shall use the reference dose values for cadmium in food in evaluating exposures to cadmium through the soil ingestion, vegetable ingestion, and dermal soil exposure pathways.

(c) Lead.

(1) The Tier 1 residential soil PCL ($^{Tot}Soil_{Comb}$) for lead is 500 mg/kg.

(2) Subject to prior approval by the executive director, the person may use property-specific data in conjunction with a lead model approved by the executive director (e.g., EPA Integrated Exposure Uptake Biokinetic model for lead in children (version 1.0 from 2005)) to calculate a Tier 3 residential soil PCL ($^{Tot}Soil_{Comb}$) for lead. The person shall submit information to the executive director which demonstrates that variance from default model inputs is supported by property-specific information (e.g., data from a scientifically valid bioavailability study using property-specific soils). Property-specific model input values must be approved by the executive director. Consistent with the development of residential RBELs for COCs without chemical-specific approaches in accordance with §350.74 of this title (Development of Risk-Based Exposure Limits), variance from certain model default exposure factors such as soil/dust ingestion rates and exposure frequency to less conservative (i.e., lower) numerical values shall not be allowed.

(3) The commercial/industrial soil PCL ($^{Tot}Soil_{Comb}$) is based only on the soil ingestion pathway ($^{Soil}Soil_{Ing}$). The person shall use the exposure algorithm and default exposure factors in the following figure for calculating the Tier 1 commercial/industrial $^{Soil}RBEL_{Ing}$ value.

Figure: 30 TAC §350.76(c)(3)

Equation for Adult Lead Exposure Commercial/Industrial Land Use (Tier 1)		
$^{Soil}Soil_{Ing}=^{Soil}RBEL_{Ing}$		
$$^{Soil}RBEL_{Ing}(\mu g/g)=\frac{\left(PbB_{95}\,fetal/\left(R\times\left(GSD_i\right)^{1.645}\right)\right)-PbB0}{BKSF\times\left(IR_{sd}\times AF_{sd}\times EF_{sd}/365\right)}$$		
Parameter	**Definition (units)**	**Default**
PbB_{95} fetal	95th Percentile PbB in Fetus (µg/dL)	10
R	Mean Ratio of Fetal to Maternal PbB	0.9
GSD_i	Individual Geometric Standard Deviation	1.91
PbB0	Baseline Blood Lead Value (µg/dL)	1.64
BKSF	Biokinetic Slope Factor (µg/dL per µg/day)	0.4
IR_{sd}	Soil/Dust Ingestion Rate (g/day)	0.05
EF_{sd}	Soil/Dust Exposure Frequency (days/yr)	250
AF_{sd}	Absolute Absorption Fraction of Lead in Soil/Dust	0.10

(4) The person may use a different exposure algorithm as presented in the following figure that considers soil and dust separately for calculating the Tier 2 and 3 commercial/industrial $^{Soil}RBEL_{Ing}$ value in cases where the person has adequate direct measurement data on the concentrations of lead in both soil and dust at the affected property. In addition, in calculating Tier 2 or 3 $^{Soil}RBEL_{Ing}$ values, the person may deviate from the default exposure factors as shown in the figure in paragraph (3) of this subsection and the following figure if property-specific or defensible alternative data (e.g., from open literature or privately funded studies) adequately support such an approach. The specific exposure factors for which the person may use property-specific or scientifically defensible alternative values are the following:

Figure: 30 TAC §350.76(c)(4)

Equation for Adult Lead Exposure Commercial/Industrial Land Use (Tiers 2 & 3 only)

$$^{Soil}Soil_{Ing} = {}^{Soil}RBEL_{Ing}$$

$$^{Soil}RBEL_{Ing}(\mu g/g) = \frac{\left(PbB_{95}\,fetal/\left(R\times\left(GSD_i\right)^{1.645}\right)\right)-PbB0}{BKSF\times\left(\left(IR_{sf}\times AF_s\times EF_{s/365}\right)+\left(K_{sd}\times IR_d\times AF_d\times EF_d/365\right)\right)}$$

Parameter	Definition (units)	Defaults
PbB_{95} fetal	95th Percentile PbB in Fetus (µg/dL)	10
R	Mean Ratio of Fetal to Maternal PbB	0.9
GSD_i	Individual Geometric Standard Deviation	1.91
PbB0	Baseline Blood Lead Value (µg/dL)	1.64
BKSF	Biokinetic Slope Factor (µg/dL per µg/day)	0.4

IR_s	Soil Ingestion Rate (g/day)	0.025
IR_d	Dust Ingestion Rate (g/day)	0.025
K_{sd}	Ratio of Concentration in Dust to that in Soil	***
EF_s	Soil Exposure Frequency (days/yr)	250
EF_d	Dust Exposure Frequency (days/yr)	250
AF_s	Absolute Absorption Fraction of Lead in Soil	0.10
AF_d	Absolute Absorption Fraction of Lead in Dust	0.10
***Based on direct measurement data on the concentrations of lead in both soil and dust at the affected property.		

(A) individual geometric standard deviation (GSD_i);

(B) baseline blood lead (PbBO);

(C) absolute absorption fraction of lead in soil/dust (Afsd);

(D) absolute absorption fraction of lead in soil (AFs); and

(E) absolute absorption fraction of lead in dust (Afd).

(d) Polychlorinated Biphenyls.

(1) In calculating Tier 1 residential and commercial/industrial soil and groundwater PCLs, the person shall use the upper-reference point of the upper-bound

slope factors (2 $(mg/kg\text{-}day)^{-1}$) for the soil ingestion, dermal contact with soil, vegetable ingestion, and inhalation (both vapor and particulate phases) exposure pathways.

(2) For Tiers 2 and 3, the person may use alternative slope factors when the following conditions are met:

(A) The person may use the lower reference point of the upper bound slope factors (0.4 $(mg/kg\text{-}day)^{-1}$) to calculate an inhalation unit risk factor when evaluating inhalation exposures to volatilized polychlorinated biphenyls. The person must still use the upper reference point of the upper bound slope factors (2 $(mg/kg\text{-}day)^{-1}$) to evaluate inhalation exposures to particulate phase polychlorinated biphenyls.

(B) The person may conduct congener or isomer analyses. The person may use the lowest reference point of the upper-bound slope factors (0.07 $(mg/kg\text{-}day)^{-1}$) for the soil ingestion, dermal contact with soil, and inhalation exposure pathways if congener or isomer analyses verify that congeners with more than four chlorines comprise less than one-half percent of total polychlorinated biphenyls in a given exposure medium. The upper reference point of the upper-bound slope factors (2 $(mg/kg\text{-}day)^{-1}$) shall be used for all other exposure pathways regardless of the results of the congener- or isomer-specific analyses. If congener or isomer analyses indicate that congeners with more than four chlorines comprise greater than one-half percent

of total polychlorinated biphenyls in a given exposure medium, then the person shall use the upper-reference point of the upper-bound slope factors (2 $(mg/kg\text{-}day)^{-1}$) for all pathways for that specific exposure medium. Further, when congener concentrations are available, the contribution of dioxin-like polychlorinated biphenyls to total dioxin equivalents shall be considered. The person shall apply the latest toxicity equivalency factors that have been reviewed and approved by the executive director [specified in the following figure]to the measured concentrations for each of the dioxin-like polychlorinated biphenyls. Persons shall use guidance provided by the executive director for determining the constituents considered to be dioxin-like polychlorinated biphenyls that must be evaluated, including the process by which they should be evaluated. These values shall then be summed to obtain a 2,3,7,8-TCDD toxicity equivalency quotient. Toxicity equivalency quotients for dioxin-like polychlorinated biphenyls shall then be added to those for other dioxin-like compounds as specified in subsection (e) of this section to yield a total toxicity equivalency quotient concentration. This total toxicity equivalency quotients concentration shall then be compared with the critical PCL for TCDD, 2,3,7,8-(dioxin). When addressing dioxin-like polychlorinated biphenyls in this manner, the person shall subtract the concentration of dioxin-like polychlorinated biphenyls from the total polychlorinated biphenyls concentration to avoid overestimating dioxin-like polychlorinated biphenyls by evaluating them twice.

[Figure: 30 TAC §350.76(d)(2)(B)]

Toxicity Equivalency Factors (TEFs) for Dioxin-Like Compounds

Congener/Class	TEF Value
2,3,7,8-Substituted Dibenzodioxins	
2,3,7,8-Tetrachlorodibenzodioxin	1
2,3,7,8-Pentachlorodibenzodioxins	1
2,3,7,8-Hexachlorodibenzodioxins	0.1
2,3,7,8-Heptachlorodibenzodioxins	0.01
Octachlorodibenzodioxins	0.0001
2,3,7,8-Substituted Dibenzofurans	
2,3,7,8-Tetrachlorodibenzofuran	0.1
1,2,3,7,8-Pentachlorodibenzofuran	0.05
2,3,4,7,8-Pentachlorodibenzofuran	0.5
2,3,7,8-Hexachlorodibenzofurans	0.1
2,3,7,8-Heptachlorodibenzofurans	0.01
Octachlorodibenzofurans	0.0001
Dioxin-Like PCBs	
3,4,4’,5-TCB (81)	0.0001
3,3’,4,4’-TCB (77)	0.0001
3,3’,4,4’,5-PeCB (126)	0.1
3,3’,4,4’,5,5’-HxCB (169)	0.01
2,3,3’,4,4’-PeCB (105)	0.0001
2,3,4,4’,5-PeCB (114)	0.0005

2,3',4,4',5-PeCB (118)	0.0001
2',3,4,4',5-PeCB (123)	0.0001
2,3,3',4,4',5-HxCB (156)	0.0005
2,3,3',4,4',5'-HxCB (157)	0.0005
2,3',4,4',5,5'-HxCB (167)	0.00001
2,3,3',4,4',5,5'-HpCB (189)	0.0001

(3) The executive director may determine that a change in a toxicity equivalency factor has been of such magnitude that the calculated toxicity equivalency quotient would not be representative of the actual toxicity of the dioxin-like polychlorinated biphenyl mixture and not protective of human health and the environment. If the executive director makes such a determination, then the person must evaluate the adequacy of the response action. If the executive director determines that a subsequent change in a toxicity equivalency factor is of such magnitude that the calculated toxicity equivalency quotient would not be representative of the actual toxicity of the dioxin-like polychlorinated biphenyl mixture such that the proposed response action is no longer warranted to protect human health and the environment, then a response action based on the previous toxicity equivalency quotient shall no longer be required.

(4[3]) In evaluating inhalation exposures under Tiers 2 or 3, the person shall convert the appropriate slope factor to an inhalation unit risk factor, based on

the following equation: Inhalation Unit Risk Factor (risk per µg/m^3)= oral slope factor x 20 m^3/day divided by 70 kg x 10^{-3} mg/µg.

(5[4]) In Tiers 2 and 3, and only when applicable for a specific site, the person may set soil PCLs based on the requirements of the Toxic Substances Control Act, 40 Code of Federal Regulations Parts 750 and 761, as amended. Sites must comply fully with all applicable Toxic Substances Control Act, as amended, requirements when establishing the soil PCL for polychlorinated biphenyls in this manner.

(e) Polychlorinated Dibenzo-p-Dioxins and Dibenzofurans.

(1) In demonstrating attainment of the critical PCL for TCDD, 2,3,7,8-(dioxin), the person shall apply the latest toxicity equivalency factors that have been reviewed and approved by the executive director[as shown in the figure in subsection (d)(2)(B) of this section] to the measured concentrations of the dioxins and furans in accordance with the following procedures. Persons shall use guidance provided by the executive director for determining the constituents considered to be dioxins and furans that must be evaluated, including the process by which they should be evaluated.

(A) When analytical data are only available for total dioxins/furans, the person shall assume that the mixture consists solely of 2,3,7,8-TCDD, and a toxicity equivalency factor value of 1.0 shall be applied to the measured concentration to yield the 2,3,7,8-TCDD toxicity equivalency quotient concentration for the sample.

(B) When homologue-specific analytical data are available (e.g., tetrachlorodibenzodioxins), the person shall assume that each homologue class is comprised solely of 2,3,7,8-substituted congeners, and shall apply the latest toxicity equivalency factors that have been reviewed and approved by the executive director[specified for the 2, 3, 7, 8-substituted congeners in the homologue class shall be applied] to the measured concentrations for that homologue class. Persons shall use guidance provided by the executive director for determining the constituents considered to be dioxins and furans that must be evaluated, including the process by which they should be evaluated. If a homologue class has more than one TEF for different congeners, the highest TEF to have been reviewed and approved by the executive director shall be used for that congener class. [A toxicity equivalency factor value of 0.5 should be used for the pentachlorodibenzofuran homologue class.]The toxicity equivalency quotient concentrations for each homologue class shall be summed to obtain a total toxicity equivalency quotient concentration for the sample.

(C) When congener-specific analytical data are available (e.g., 1, 2, 3, 4, 7, 8-hexachlorodibenzofuran), the person shall apply the latest toxicity

equivalency factors that have been reviewed and approved by the executive director for the 2, 3, 7, 8-substituted congeners to the measured concentrations. Persons shall use guidance provided by the executive director for determining the constituents considered to be dioxins and furans that must be evaluated, including the process by which they should be evaluated. The toxicity equivalency quotient concentrations for each 2, 3, 7, 8-substituted congener shall then be summed to obtain a total toxicity equivalency quotient concentration for the sample.

(D) The executive director may determine that a change in a toxicity equivalency factor has been of such magnitude that the calculated toxicity equivalency quotient would not be representative of the actual toxicity of the dioxin and furan mixture and not protective of human health and the environment. If the executive director makes such a determination, the person must evaluate the adequacy of the response action. If the executive director determines that a subsequent change in a toxicity equivalency factor is of such magnitude that the calculated toxicity equivalency quotient would not be representative of the actual toxicity of the dioxin and furan mixture such that the proposed response action is no longer warranted to protect human health and the environment, then a response action based on the previous toxicity equivalency quotient shall no longer be required.

(2) The person shall then compare the total toxicity equivalency quotient concentration established in paragraph (1) of this subsection to the critical PCL for TCDD, 2, 3, 7, 8-(dioxins).

(3) The person shall calculate [The]the critical soil PCLs for residential and commercial/industrial properties for a 2,3,7,8-TCDD toxicity equivalency quotient according to the equations and rule provisions provided in §350.75.[for all three tiers is 1 part per billion (ppb) and for commercial/industrial properties for all three tiers is 5 ppb.]

(f) Polycyclic Aromatic Hydrocarbons.

(1) In calculating residential and commercial/industrial PCLs for all tiers, the person shall evaluate the following seven polycyclic aromatic hydrocarbons as carcinogens:

(A) benzo {a} anthracene;

(B) benzo {b} fluoranthene;

(C) benzo {k} fluoranthene;

(D) benzo {a} pyrene (B {a} P);

(E) chrysene;

(F) dibenzo {a, h} anthracene; and

(G) indeno {1, 2, 3-c, d} pyrene.

(2) The person shall use the relative potency factors outlined in the following figure to estimate cancer slope factors and unit risk estimates for each of the polycyclic aromatic hydrocarbons identified in paragraph (1) of this subsection for all exposure pathways (e.g., the soil ingestion, vegetable ingestion, inhalation, dermal contact with soil, and groundwater ingestion (in the absence of a primary MCL) exposure pathways):

Figure: 30 TAC §350.76(f)(2)

Relative Potency Factors (RPF) for Carcinogenic PAHs	
Compound	**RPF**
Benz{a}anthracene	0.1
Benzo{a}pyrene	1
Benzo{b}fluoranthene	0.1

Relative Potency Factors (RPF) for Carcinogenic PAHs	
Compound	**RPF**
Benzo{k}fluoranthene	0.01
Chrysene	0.001
Dibenz{a,h}anthracene	1
Indeno{1,2,3-c,d}pyrene	0.1

(3) The cancer slope factors and inhalation unit risk factors for the seven carcinogenic polycyclic aromatic hydrocarbons, shall be calculated according to the equations set forth in the following figure:

Figure: 30 TAC §350.76(f)(3)

Equations for Calculating Cancer Slope Factors and Unit Risk Factors for Carcinogenic PAHs

$$SF_{PAH} = (SF_{B[a]P})\ (RPF_{PAH})$$

where: SF_{PAH} = adjusted cancer slope factor for a PAH $(mg/kg\text{-}day)^{-1}$
$SF_{B[a]P}$ = cancer slope factor for benzo{a}pyrene $(mg/kg\text{-}day)^{-1}$
RPF_{PAH} = relative potency factor for a PAH in Figure 30 TAC §350.76(f)(2) (unitless)

$$URF_{PAH} = (URF_{B[a]P})\ (RPF_{PAH})$$

where: URF_{PAH} = adjusted inhalation unit risk factor for a PAH $(\mu g/m^3)^{-1}$
$URF_{B[a]P}$ = inhalation unit risk factor for benzo{a}pyrene $(\mu g/m^3)^{-1}$
RPF_{PAH} = relative potency factor for a PAH in (Figure 30 TAC §350.76(f)(2)) (unitless)

(4) The person shall not apply the relative potency factor for any pathways when evaluating noncarcinogenic endpoints.

(5) For class 1 or 2 groundwater, the person shall establish PCLs according to the procedures in subparagraphs (A) and (B) of this paragraph.

(A) In evaluating residential and commercial/industrial exposures to class 1 and 2 groundwater for all tiers, the person shall use the most currently available primary MCL for benzo{a}pyrene as ${}^{GW}GW_{Ing}$ for benzo{a}pyrene.

(B) In establishing ${}^{GW}GW_{Ing}$ for class 1 and 2 groundwater for the six remaining carcinogenic polycyclic aromatic hydrocarbons, the person shall use the higher of the calculated ${}^{GW}RBEL_{Ing}$ or the primary MCL for B{a}P as ${}^{GW}GW_{Ing}$ for that specific polycyclic aromatic hydrocarbon. In the event that primary MCLs for the other carcinogenic polycyclic aromatic hydrocarbons become available, those MCLs would serve as ${}^{GW}GW_{Ing}$ for these compounds.

(g) Total Petroleum Hydrocarbons.

(1) The person shall follow the methodology prescribed by this subsection to establish PCLs for total petroleum hydrocarbons, unless the executive director approves the use of an alternate method.

(2) In order to establish PCLs for total petroleum hydrocarbons, the person shall establish PCLs for each of the aliphatic and aromatic hydrocarbon fractions listed in the following figure (e.g., aliphatic $>C_6$-C_8) for the mandatory and complete or reasonably anticipated to be completed exposure pathways as required in §350.71(c) of this title (relating to General Requirements):

Figure: 30 TAC §350.76(g)(2)

Hydrocarbon Fractions and Toxicity Factors		
Aliphatic Hydrocarbon Fraction	Surrogate for Oral RfD	Surrogate for Inhalation RfC
C_6	n-hexane	n-hexane[1] commercial hexane[2]
$>C_6$-C_8	n-hexane	n-hexane[1] commercial hexane[2]
$>C_8$-C_{10}	C9-C17 aliphatics	dearomatized white spirits
$>C_{10}$-C_{12}	C9-C17 aliphatics	dearomatized white spirits
$>C_{12}$-C_{16}	C9-C17 aliphatics	dearomatized white spirits
$>C_{16}$-C_{21}	white mineral oils	----
$>C_{16}$-C_{21} (for transformer mineral oil releases only)	transformer mineral oil	----
$>C_{21-35}$[3]	white mineral oil	----
$>C_{21}$-C_{35} (for transformer mineral oil releases only)	transformer mineral oil	----
Aromatic Hydrocarbon Fraction	Surrogate for Oral RfD	Surrogate for Inhalation RfC
$>C_{7-8}$	ethylbenzene	ethylbenzene
$>C_8$-C_{10}	multiple aromatic compounds	high flash aromatic naphtha
$>C_{10}$-C_{12}	multiple aromatic compounds	high flash aromatic naphtha

>C_{12}-C_{16}	multiple aromatic compounds	multiple aromatic compounds
>C_{16}-C_{21}	pyrene	----
>C_{21}-C_{35} [3]	pyrene	----

Footnotes:

1. For mixtures with greater than 53% n-hexane content.
2. For mixtures with less than or equal to 53% n-hexane content.
3. The person may truncate the analysis at C_{28} when there does not appear to be significant mass of >C_{28} based on the gas chromatogram and the product is anticipated to be a lighter hydrocarbon (e.g., gasoline, diesel, not transformer mineral oil, or used motor oil).

(3) The person shall use the specific toxicity factors for the specific surrogates as shown in the figure in paragraph (2) of this subsection for a hydrocarbon fraction. If a reference concentration is not available, then the person shall not be required to comply with §350.73(c) of this title (relating to Determination and Use of Human Toxicity Factors and Chemical Properties). The PCLs established under this subsection shall be based on noncarcinogenic effects.

(4) The person shall ensure that the PCLs established for each hydrocarbon fraction comply with the hazard quotient criteria as set forth in §350.72 of this title (relating to Carcinogenic Risk Levels and Hazard Indices for Human Health Exposure Pathways).

(5) The person shall ensure that the PCLs established for the total petroleum hydrocarbons comply with the hazard index criteria as set forth in §350.72

of this title considering only the hydrocarbon fractions as shown in the figure in paragraph (2) of this subsection. The person shall follow the methodology prescribed in §350.72(d) of this title to adjust the hydrocarbon fraction PCLs to meet the hazard index criteria for the total petroleum hydrocarbons.

(6) The person shall use an analytical method approved by the executive director to determine the concentration of the hydrocarbon fractions at the affected property.

(7) When the bulk total petroleum hydrocarbons composition can be assumed to be relatively consistent based on process knowledge, the person may establish mixture-specific (e.g., gasoline, diesel, transformer mineral oil, or other petroleum product) PCLs based on property-specific mixture compositions or mixture compositions considered to be representative of the mixture. The person shall comply with the other provisions of this subsection in the development of the mixture-specific PCLs, but the person shall be allowed to determine compliance with the mixture-specific total petroleum hydrocarbons PCL with a bulk total petroleum hydrocarbons analytical method acceptable to the executive director in lieu of analysis of the concentration of each hydrocarbon fraction.

(8) The PCLs established for each individual aliphatic and aromatic hydrocarbon fraction used to establish the mixture specific PCLs shall not exceed a hazard quotient of 1 and the mixture-specific PCL shall not exceed a hazard index of 10.