



Pennsylvania
**Department of
Environmental Protection**

**COMMENT AND RESPONSE
DOCUMENT**

Administration of the Land Recycling Program

25 Pa. Code Chapter 250
54 Pa.B. 3937 (July 13, 2024)
Environmental Quality Board Regulation #7-575
(Independent Regulatory Review Commission #3409)

INTRODUCTION

The Environmental Quality Board (Board or EQB) adopted the Administration of the Land Recycling Program – Chapter 250 proposed regulation at its meeting on March 12, 2024. This proposed rulemaking updated the regulations for implementing the Land Recycling Program in Chapter 250. Section 250.11 of the Land Recycling Program’s regulations requires the Department of Environmental Protection (Department or DEP) to review new scientific information that relates to the basis of the Statewide health standard medium-specific concentrations (MSCs) at least 36 months after the effective date of the most recently promulgated MSCs and to propose to the Board any changes to the MSCs as necessary. In addition to updating the existing MSCs, the proposed rulemaking added MSCs for five new contaminants, namely hexafluoropropylene oxide (HFPO) dimer acid, HFPO dimer acid ammonium salt (Gen-X), perfluorobutane sulfonate (PFBS), and the potassium salt of PFBS. These contaminants are within the Per- and Poly-fluoroalkyl Acid (PFAS) family of compounds for which the United States Environmental Protection Agency (EPA) has published toxicological data. This rulemaking also clarifies several other regulatory requirements.

PUBLIC COMMENT PERIOD

On July 13, 2024, the Board published the proposed rulemaking in the *Pennsylvania Bulletin*, (54 Pa.B. 3937) for a 60-day comment period. The Board held three public hearings on this proposed rulemaking on August 19, 2024, at 1 p.m. at the DEP Southwest Regional Office; August 27, 2024, at 1 p.m. at the DEP Southeast Regional Office; and a virtual hearing on September 4, 2024, at 6 p.m., but received no testimony at the public hearings. The public comment period closed on September 11, 2024. During the public comment period, the Board received 18 public comments.

This document includes all written comments received during the public comment period and comments from the Independent Regulatory Review Commission (IRRC). Comments of similar subject matter are grouped together and responded to accordingly. Many comments are summarized; comments copied verbatim are identified by quotation marks.

A list of the commentators including name, affiliation (if any), and location can be found on the following page. The commentator list also includes identification numbers for each comment submission, which are referenced in parentheses following each comment in this document.

COPIES OF COMMENTS

All comments received by the Board during the public comment period are posted on the Department’s eComment website at the following link:

<https://www.ahs.dep.pa.gov/eComment/ViewComments.aspx?enc=DN064MT8R38NKyiRv2iU7OQ77AqExsJAZaH0aYsc8JM%3d>

Additionally, copies of all comments received by the Board on this rulemaking are posted on IRRC’s website at the following link:

<https://www.irrc.state.pa.us/regulations/RegSrchRslts.cfm?ID=3424>

LIST OF COMMENTATORS

ID	Name/Affiliation/Address
1	Independent Regulatory Review Commission (IRRC)
2	Brian Hilliard Lehigh Consulting Firm, Inc. Kutztown, PA
3	Steven Kratz Pennsylvania Chemical Industry Council Harrisburg, PA
4	Amy Brinton PA Chamber of Business and Industry Harrisburg, PA
5	Annie Fox Clean Air Council Philadelphia, PA
6	Emma Grant Downingtown, PA
7	Tom Pike Pittsburgh, PA
8	Annette Ballard Philadelphia, PA
9	Meg Chrisler Media, PA
10	Will Willis Mercersburg, PA
11	Michael Lombardi Levittown, PA
12	Judith Henckel Mount Bethel, PA
13	Carolyn Healy Philadelphia, PA
14	Walter Tsou Philadelphia, PA
15	Nancy Bergey New Wilmington, PA
16	Dorothea Leicher Columbia Cross Roads, PA
17	Pouné Saberi Philadelphia, PA
18	Thomas Nelson Lansdowne, PA
19	Katie Muth Royersford, PA

No commentators requested a copy of the final-form rulemaking.

ACRONYMS AND ABBREVIATIONS USED IN THIS DOCUMENT

Act 2 – Land Recycling and Environmental Remediation Standards Act
ALM – Adult Lead Model
CDC – Centers for Disease Control and Prevention
CERCLA – Comprehensive Environmental Response, Compensation, and Liability Act
CFCL – Clean Fill Concentration Limits
CSSAB – Cleanup Standards Scientific Advisory Board
DEP or Department – Pennsylvania Department of Environmental Protection
EPA – United States Environmental Protection Agency
EQB or Board – Environmental Quality Board
HAL – Health Advisory Level
HI – Hazard Index
IEUBK model – Integrated Exposure Uptake Biokinetic model
IRRC – Independent Regulatory Review Commission
MCL – Maximum Contaminant Level
MCLG – Maximum Contaminant Level Goal
MoFP – Management of Fill Policy
MSC – Medium-Specific Concentration
 $\mu\text{g}/\text{dL}$ – micrograms per deciliter
 $\mu\text{g}/\text{kg}$ – micrograms per kilogram
NPDWR – National Primary Drinking Water Regulation
PFAS – Per- and polyfluoroalkyl substances
PFBS – Perfluorobutane sulfonate
PFHxS – Perfluorohexanesulfonic acid
PFNA – Perfluorononanoic acid
PFOA – Perfluorooctanoic acid
PFOS – Perfluorooctanesulfonic acid
RFCL – Regulated Fill Concentration Limits
SPLP – Synthetic Precipitation Leaching Procedure
TBLL – Target Blood Lead Level

COMMENTS

MSC values for PFAS – Appendix A, Table 1

- 1. Comment:** IRRC commented that in “April, the United States Environmental Protection Agency (EPA) established a National Primary Drinking Water Regulation (NPDWR) final rulemaking, establishing maximum contaminant levels (MCLs) and health-based Maximum Contaminant Level Goals (MCLGs) for six per- and polyfluoroalkyl substances (PFAS) in drinking water. The EPA final rulemaking standards, which went into effect on June 25, 2024, differ from the standards approved by the Board in March and contained in this proposed regulation.

This issue of timing and discrepancy between the EPA rulemaking and the Board’s proposed regulation is a significant concern for all of the public commenters and this Commission. For clarity of implementation and protection of the public health, safety, and welfare, we ask the Board to amend the final regulation to align with federal standards. If the standards in the final regulation differ from the EPA final rulemaking, we ask the Board to explain how implementation of the final regulation is clear and protects the public health, safety, and welfare.” (1)

As IRRC noted, all of the commentators expressed concern that the Federal rulemaking postdated the development of DEP’s proposed amendments and the EQB’s adoption of the proposed regulation at its March 12, 2024, meeting. All parties commented that the Federal standards should be added to the final regulation. (1-19)

IRRC also noted two commentators’ concerns that the Federal MCLs automatically became the MSCs for those PFAS in groundwater 60 days after the final rule’s publication, on June 25, 2024. “The Department’s review of and proposed changes related to PFAS MSCs are incomplete and out of sync with the rapidly evolving landscape of PFAS regulation at the federal level. A possible solution for this inconsistency is for the Department to amend the currently proposed MSC tables for certain PFAS to incorporate the new federal NPDWR MCLs as groundwater MSCs and to re-publish these changes in the *Pennsylvania Bulletin* for further public comment. If finalized in their current form, the regulated community will be left with an outdated and incomplete set of MSC tables for PFAS that do not otherwise incorporate the latest relevant standards for groundwater. The Department should at the same time provide compliance and enforcement clarifications.” (1, 3, 4)

Response: The proposed regulation was adopted by the EQB at the March 12, 2024, meeting. This predated the publication of the EPA’s PFAS National Primary Drinking Water Regulation final rulemaking (Federal PFAS MCL rule), establishing MCLs for several PFAS on April 26, 2024 ([89 FR 32532](#)). However, the Land Recycling and Environmental Remediation Standards Act (Act 2) (35 P.S. § 6026.303(a)) requires DEP to adopt Federal MCLs as the groundwater MSCs, and DEP’s regulations incorporate the Federal MCLs by reference in 25 Pa. Code § 250.304(c). Therefore, the Federal PFAS MCLs were adopted by the Department on the effective date of June 25, 2024, and are now the groundwater MSCs. To notify the public and assist remediators with this change, DEP has posted the new Statewide health standard MSC values for groundwater on the Statewide Health Standards

portion of the DEP website, which can be found at www.dep.pa.gov and searching for “Statewide health standards” (<https://www.pa.gov/agencies/dep/programs-and-services/land/land-recycling-program/standards-guidance-and-procedures/statewide-health-standards>). DEP also notified the public of this change on June 28, 2024, by sending a Brownfields Bulletin update to the subscribers of the Land Recycling Program’s [Pennsylvania Brownfields Mailing List](#).

In response to comments on the proposed rulemaking, the final-form regulation has been updated to incorporate the standards in the Federal PFAS MCL rule. The PFOA and PFOS groundwater standards have been revised to the standards in the Federal PFAS MCL rule, and the Federal PFAS MCL rule standards for groundwater for PFHxS and PFNA have been added to the final-form regulation. As discussed previously, these groundwater values are currently in effect. All soil values for PFHxS, PFNA, PFOA, and PFOS have been calculated and have been added to or updated in the tables. The inclusion of the Federal PFAS MCL rule’s Hazard Index (HI) methodology required additional detailed explanation, which has been added to § 250.304(c)(3) and § 250.707(b)(2)(iii).

As two commentators noted, the landscape of PFAS regulation at the Federal level is rapidly evolving. During this period of uncertainty, the Federal PFAS MCLs have been effective and enforceable. Based on public comments, they are now being added to the regulations. Including the current MSC values into the tables gives remediators and the public access to accurate clean up requirements within the regulations.

2. Comment: IRRC noted two commentators’ recommendation that “the Department should clarify how it will implement EPA’s novel and unprecedented Hazard Index (HI) approach for PFAS groundwater MSCs and for future PFAS soil MSCs.” (1, 3, 4)

The two commentators also expressed concern that the HI must be calculated using a “highly complex equation that has never been required of the regulated community in the context of MSCs,” noting DEP published information on incorporating the Federal MCL into the MSC groundwater tables and utilizing the HI approach for PFAS substances subject to the Federal MCL on the Land Recycling Program’s MSC webpage. The commentators recommended DEP “utilize the Cleanup Standards Science Advisory Board (CSSAB) to create a PFAS workgroup to establish clarity and uniformity related to these proposed changes related to MSCs and PFAS.” (3, 4)

Response: As explained in the response to Comment #1, Act 2 requires DEP to adopt Federal MCLs as the groundwater MSCs, and DEP’s regulations incorporate the Federal MCLs by reference in 25 Pa. Code § 250.304(c). Act 2 does not allow DEP to choose which Federal MCLs to adopt. The adoption of the Federal PFAS MCL rule requires the use of the HI calculation method. The MCLs are effective as the MSCs as of June 25, 2024, which is explained on the Statewide Health Standards portion of the DEP website which can be found at www.dep.pa.gov and searching for “Statewide health standards” (<https://www.pa.gov/agencies/dep/programs-and-services/land/land-recycling-program/standards-guidance-and-procedures/statewide-health-standards>). In addition to meeting the individual MSC, if more than one of the four PFAS compounds included in the HI calculation (Gen-X, PFBS, PFHxS, PFNA) are detected, an HI must be calculated. The HI

MSC is met by maintaining a rolling average HI of less than one for the most recent four consecutive quarters of samples using the equation provided in EPA's MCL rule. This explanation has been added to the final regulation in § 250.304(c)(3) and § 250.707(b)(2)(iii).

The Federal PFAS MCL rule applies to drinking water and is adopted as the groundwater MSC. DEP has determined that because the Federal PFAS MCL rule applies to drinking water, the HI calculation only applies to groundwater MSCs and does not impact the soil MSCs. This includes both the direct contact and soil-to-groundwater MSCs. A Technical Notice was posted to the Land Recycling Program's "Statewide Health Standards" webpage on January 12, 2026, at

<https://files.dep.state.pa.us/EnvironmentalCleanupBrownfields/LandRecyclingProgram/LandRecyclingProgramPortalFiles/GuidanceTechTools/Tech%20Notice%20JAN2026%20EPA%20PFAS%20MCL%20HI%20for%20Soil%20Determination.pdf>, explaining the rationale behind the determination that the HI rule does not apply to soil MSCs.

DEP has worked with the CSSAB to create a PFAS workgroup, as recommended by the commentators. The specific issues being explored by this workgroup were discussed at the CSSAB meeting on October 22, 2025, including best practices for fate and transport modeling and the development of soil-to-groundwater generic values for PFAS in soil.

The final-form regulation has been updated to incorporate the standards in the Federal PFAS MCL rule. The PFOA and PFOS groundwater standards have been revised to the standards in the Federal PFAS MCL rule, and the Federal PFAS MCL rule standards for groundwater for PFHxS and PFNA have been added to the final-form regulation to reflect current residential values. All soil values for PFHxS, PFNA, PFOA, and PFOS have been calculated and added to or updated in the tables. The inclusion of the HI methodology required additional detailed explanation, which has been added to § 250.304(c)(3) and § 250.707(b)(2)(iii).

- 3. Comment:** IRRC noted several commentators' suggestion that the "Department should add perfluorohexanesulfonic acid (PFHxS) and perfluorononanoic acid (PFNA) to the regulated substances and add soil to groundwater and direct contact soil MSCs for PFHxS and PFNA." (1, 5–19)

The commentators also suggested updating the proposed soil and groundwater contamination standards for PFOS and PFOA to reflect the latest toxicity values used by the EPA. (5–19)

Response: As explained in the responses to Comments #1 and #2, the proposed regulation was adopted by the EQB on March 12, 2024, before publication of the EPA's Federal PFAS MCL rule on April 26, 2024, that established MCLs for PFOA, PFOS, PFHxS, and PFNA. However, Act 2 (35 P.S. § 6026.303(a)) requires DEP to adopt Federal MCLs as the groundwater MSCs, and DEP's regulations incorporate the Federal MCLs by reference in 25 Pa. Code § 250.304(c). Therefore, the Federal PFAS MCLs were adopted by the Department on June 25, 2024, the Federal PFAS MCL rule's effective date, and are now effective as the groundwater MSCs.

In response to comments on the proposed rulemaking, the final-form regulation has been updated to incorporate the standards in the Federal PFAS MCL rule. The PFOA and PFOS

groundwater standards have been revised to the standards in the Federal PFAS MCL rule, and the Federal PFAS MCL rule standards for PFNA and PFHxS have been added to the groundwater MSC tables in the final-form regulation. All soil values for PFHxS, PFNA, PFOA, and PFOS have been calculated and added to or updated in the tables. The inclusion of the HI methodology required an additional detailed explanation, which has been added to § 250.304(c)(3) and § 250.707(b)(2)(iii).

- 4. Comment:** Two commentators suggested that DEP should delay implementation of the EPA MCL values as effective MSCs until the public drinking water enforcement date of April 26, 2029, and use Pennsylvania’s MCLs for PFOA and PFOS in the meantime. **(3, 4)**

Response: As noted in the response to Comment #1, Act 2 requires DEP to adopt Federal MCLs as the groundwater MSCs, and DEP’s regulations incorporate the Federal MCLs by reference in 25 Pa. Code § 250.304(c). Therefore, the Federal PFAS MCLs were adopted and became effective as the groundwater MSCs on June 25, 2024, the Federal PFAS MCL rule’s effective date. The proposed amendments to 25 Pa. Code § 250.304(c) also clarify that the EPA or DEP MCLs and health advisory levels (HALs) become effective immediately upon the effective date established in the Federal Register or the *Pennsylvania Bulletin*. The EPA enforcement date is different from the effective date in that it delays the issuing of fines and required notifications to allow for public water systems to take the necessary steps to install treatment systems to comply with these new PFAS MCLs.

- 5. Comment:** IRRC noted a commentator’s “concern that overly stringent PFAS limits could lead to the unnecessary reopening of previously closed [Land Recycling and Environmental Remediation Standards Act (Act 2)] or [Comprehensive Environmental Response, Compensation, and Liability Act] sites.” **(1, 3)**

Response: The MSCs provided in Chapter 250 must be reviewed every three years; these regular required reviews of the MSCs often cause the reduction or increase of MSCs. Instead of reopening sites when the MSCs decrease, DEP encourages responsible parties to re-enter the Land Recycling Program to address any contamination that remains on site if there is concern. This approach is consistent with the voluntary nature of Act 2. CERCLA is a federal program, which is implemented and enforced by the EPA. In contrast to the Land Recycling Program, CERCLA is not a voluntary program. DEP is unable to dictate the actions of the EPA in relation to CERCLA sites.

- 6. Comment:** A commentator recommended adding “legal language to protect against reopening Act 2 and CERCLA sites that were previously closed.” **(3)**

Response: Act 2 already provides protection for remediators by providing that “[a]ny person who completes remediation in compliance with this act shall not be required to undertake additional remediation actions unless the department demonstrates” limited, specific circumstances exist that require the site to be reopened. 35 P.S. § 6026.505. Since Act 2 is a voluntary program, DEP encourages responsible parties to re-enter the program rather than re-opening sites.

CERCLA is a Federal statute, and as such, DEP is unable to add any language to the statute, including legal protections.

- 7. Comment:** IRRC noted two commentators' concerns that "other programs, such as the 'fill management program,' rely on the MSCs pursuant to Act 2. Under the *Management of Fill Policy*, the numeric values on which cleanup standards for soils are based in Chapter 250 are incorporated by reference for purposes of determining the clean fill concentration limits and the regulated fill concentration limits. These PFAS concentration limits in turn affect virtually every project in Pennsylvania where fill materials are being imported or exported. The Department's regulatory analysis of the benefits, costs, and compliance associated with the proposed regulation did not account for significant impacts on the regulated community and the confusion created through the incorporation of the PFAS MCLs as MSCs, as well as the use of the HI approach for a combination of PFAS." (1, 3, 4)

Response: The *Management of Fill Policy* (MoFP) was developed and is maintained by DEP's Bureau of Waste Management. The purpose of the MoFP is to provide procedures for determining whether fill is "clean fill," as defined in the municipal and residual waste regulations at 25 Pa. Code § 271.1 and 25 Pa. Code § 287.1, respectively, or "regulated fill," as defined in the MoFP. Fill may qualify for use as clean fill by determining that it has not been subject to a release of a regulated substance. Fill that has been subject to a release of a regulated substance does not qualify for use as clean fill, unless appropriate sampling and chemical analysis can demonstrate that the regulated substances do not exceed the applicable clean fill concentration limits (CFCL) or regulated fill concentration limits (RFCL), as the terms are defined in the MoFP. With few exceptions, the CFCLs are derived by choosing from Chapter 250 the lower of the residential direct contact numeric value and the generic soil-to-groundwater numeric value for each constituent expected to be in the fill. The same procedure was followed for the RFCL values except that the Chapter 250 non-residential numeric values are used for selecting the appropriate numeric value.

As noted by the commentators, the MoFP incorporates the Chapter 250 numeric values by reference. The Chapter 250 numeric values represent concentrations of contaminants in soil and groundwater at levels that are protective of human health and the environment for the intended land use under the provisions of Act 2. Chapter 250 rulemakings involving MSC changes will impact the MoFP. However, the current PFAS standards have been listed in the Chapter 250 regulations since 2021; therefore, the addition of new PFAS MSCs to the Chapter 250 tables does not alter the way PFAS are evaluated under the MoFP nor will it increase the effort or cost needed to evaluate PFAS. The addition of new PFAS to the Chapter 250 tables benefits remediators by providing the opportunity to use the Statewide health standard for a wider variety of substances. This gives remediators the opportunity to use the Statewide health standard in addition to the background and site-specific standards. It is also worth noting that the MoFP is used for clean fill determinations on fill that is known or suspected to have been impacted by a release. If PFAS are not known or suspected to have been part of a release at the site, then PFAS do not need to be evaluated as part of the clean fill demonstration under the MoFP. The change in the number and concentration of PFAS standards is not anticipated to impact the process or the ability to attain the CFCL or RFCL.

The incorporation of the EPA's MCL values as the Chapter 250 groundwater MSCs may cause confusion under the MoFP. Because there are no soil-to-groundwater values or soil direct contact values for certain PFAS, the Synthetic Precipitation Leaching Procedure (SPLP) procedure, as described in Appendix F of the MoFP, will be used for clean fill determinations involving fill that is suspected or known to contain those PFAS. Use of the SPLP procedure requires a comparison of the SPLP results to the groundwater MSCs in Chapter 250. The HI portion of EPA's MCL rule was never intended to be used for soil, and therefore, it does not apply to fill determinations under the MoFP.

8. **Comment:** IRRC noted two commentators' concern that the "Department has not established generic PFAS soil-to-groundwater MSCs due to incomplete technical information. This is an important component of the MSC tables for soil-to-groundwater values and has significant ramifications for other Department programs, such as the *Management of Fill Policy* under the Solid Waste Management Act." (1, 3, 4)

Response: The calculation of generic soil-to-groundwater values for PFAS has proven to be scientifically insupportable at this time. The generic value calculations rely on the ability to accurately predict how a compound will behave in the subsurface. Because PFAS compounds have novel characteristics, it is currently unknown if those generic assumptions apply. Studies of PFAS subsurface behavior are underway by other organizations (EPA, the Interstate Technology and Regulatory Council, etc.) and will be considered during the development of future Chapter 250 rulemakings.

Under the MoFP, Appendix A, Section F provides guidance on utilizing the EPA's [SW-846 Method 1312: Synthetic Precipitation Leaching Procedure](#) (SPLP) to establish an alternative soil-to-groundwater value. SPLP is designed to determine the mobility of both organic and inorganic substances present in soils and waste. The value for the SPLP analysis represents the concentration of a regulated substance in site-specific soil that does not produce leachate containing a regulated substance in excess of a groundwater MSC identified in Tables 1 or 2 of Appendix A in Chapter 250. If the sample of highest total concentration yields an SPLP result that is less than the applicable groundwater MSC, then the alternative soil-to-groundwater value is that total concentration. If all SPLP results are non-detects and the reporting limit is less than the applicable groundwater MSC, the alternative soil-to-groundwater value is the highest total concentration for which a corresponding SPLP analysis was carried out. This information is included in both Appendix A, Section F of the MoFP, as well as described in more detail in Section II.B.2.c.ii.a of the [Land Recycling Program Technical Guidance Manual](#).

9. **Comment:** IRRC noted two commentators' suggestion that the "Department should strengthen its due diligence component of the clean fill determination process to clarify that contaminants, including PFAS, do not need to be included in the suite of analytical parameters where they are not known or suspected to be present and to limit clean fill sampling analytes to parameters of potential concern identified during the due diligence process. Additionally, establishing a statewide background value would provide a more consistent baseline for assessing PFAS contamination in clean-fill materials, making it easier to determine whether they meet the necessary standards without conducting extensive and expensive determinations at both the donor and receiving sites." (1, 3, 4)

One commentator also suggested DEP evaluate and publish anticipated background levels of atmospheric deposition from anthropogenic sources of PFAS, stating that, “Act 2 expressly provides for the use of a background standard in accordance with 25 PA Code § 250.201, including reliance on regional background conditions. The *Management of Fill Policy* likewise allows the use of background demonstration, and DEP has previously published such background reference values.” (4)

Response: The *Management of Fill Policy* (MoFP) is administered by DEP’s Bureau of Waste Management to evaluate whether a person is required to obtain a permit under the Solid Waste Management Act for the use of fill in accordance with the municipal and residual waste regulations, 25 Pa. Code § 271.101(b)(3) and § 287.101(b)(6). The MoFP describes the type of fill that qualifies as clean fill or regulated fill and how to perform an evaluation to determine whether a permit is required for the placement of fill. Generally, the MoFP is not applicable to activities on a site undergoing Act 2 remediation, and as such it is not part of the Chapter 250 rulemaking. However, the MoFP incorporates by reference the numeric values in the Chapter 250 MSC tables ; the values are applicable to persons who are performing a fill determination in accordance with the policy.

The definition of environmental due diligence in the MoFP states, “Investigative techniques used to determine whether fill from a donor site has been affected by a release of a regulated substance.” Therefore, analytical testing is not always part of environmental due diligence.

Neither the MoFP nor Chapter 250 require users of fill or remediators, respectively, to analyze for all the regulated substances for which a CFCL or RFCL or MSC exists. The definition of “uncontaminated” in the MoFP states, “analysis should be carried out for only those regulated substances that are suspected to be present in the fill,” meaning that only those regulated substances that are suspected to be present in the fill due to the type of release indicated by the environmental due diligence should be analyzed.

As per Section B.2 of the MoFP, except for historic fill, analytical testing is not necessary unless environmental due diligence indicates that the fill has been subject to a release of a regulated substance. However, a person performing a fill determination may choose to perform analytical testing in lieu of conducting a review of ownership and historic property use to satisfy the minimum condition for performing environmental due diligence. For fill to qualify for use as clean fill, the user or remediator determines whether it is uncontaminated as the term is defined in the policy. Fill can meet the definition of “uncontaminated” by either determining through environmental due diligence that it has not been subject to a release or demonstrating through sampling and analysis that although the fill has been subject to a release, the regulated substance is not present at a concentration exceeding the CFCL.

Act 2 does not authorize the EQB to establish Statewide background values. Rather, 25 Pa. Code § 250.201 explains that Subchapter B of the Land Recycling Program’s regulations specify the requirements and procedures for attaining the background standard. As explained in the other sections of Subchapter B, the background conditions used in attainment of the standard are based on the characterization and information specific to the subject property. As explained in 25 Pa. Code § 250.202(b), the background concentration for attainment is established using analysis of samples from the property that are not impacted by a release or,

if all areas of the property are impacted, soil samples from off-property may be used. It would be difficult to generate background soil concentrations for the entire state or even specific regions of the state as conditions will vary significantly by location, influenced by factors like proximity to industrial sites or historical use of certain products. For these reasons, a background standard needs to be based on characterization and data collected from each individual subject property.

Appendix A, Section G in the MoFP provides guidance on “Performing a Background Demonstration and Equivalent Site Evaluation.” Generally, only naturally occurring metals, lead and some ubiquitous organics, from widespread atmospheric deposition, are eligible for a background demonstration. The Department has published background reference values only once, for naturally occurring vanadium in 2022. In that case, it was widely documented that the concentration of naturally occurring vanadium in Pennsylvania surface soils exceeded the direct contact residential soil MSC (15 mg/Kg) in effect at the time, by a factor of two to ten in most cases. Notice of this Interim Final Technical Guidance Document (TGD) [No. 258-2182-774] was published in the *Pennsylvania Bulletin* on February 26, 2022. The TGD served as a temporary measure while the Land Recycling Program worked to update the vanadium value in the Chapter 250 regulations. The TGD was rescinded after the final publication of the updated vanadium MSCs in the *Pennsylvania Bulletin* on November 11, 2023. In addition, the interim TGD clearly stated that the guidance applied only to naturally occurring vanadium, not to soils impacted by a release of vanadium or to historic fill. The person performing the clean fill determination was required to prove, through due diligence, that the vanadium was naturally occurring and not a result of a release, application of historic fill, or arial deposition.

- 10. Comment:** One commentator requested that DEP “confirm that the Site-Specific Standard can be used for any PFAS with toxicity data listed in Chapter 250.605. This confirmation would provide a standardized approach for assessing PFAS contamination in soil and determining remediation needed.” (3)

Response: The site-specific standard is available to be used for PFAS compounds where toxicity data are provided by the sources listed in 25 Pa. Code § 250.605.

MSC values for cPAHs – Appendix A, Table 3A

- 11. Comment:** IRRC noted several commentators’ assertion that the “Department’s proposed contamination standards for six carcinogenic polycyclic aromatic hydrocarbons create a cumulative cancer risk of 3 in 10,000. This is greater than the maximum cancer risk allowable for statewide health standards: 1 in 10,000.” (1, 5–19)

Additionally, many of the commentators calculated and expressed that the direct contact soil MSCs for six carcinogenic Polycyclic Aromatic Hydrocarbons (cPAHs) are unlawfully high, and the method the Department used to calculate the direct contact soil MSCs for cPAHs results in unlawfully high cancer risks from cPAH mixtures from direct contact soil. (5–19)

Response: Section 303 of Act 2 (35 P.S. § 6026.303) enumerates the requirements for setting Statewide health standards to implement the Land Recycling Program. The requirements in

Section 303 do not include consideration of cumulative risk in setting Statewide health standards. However, the MSCs for the six cPAHs have been calculated to protect public health, safety, and welfare and is described as follows.

Section 303(c)(1) of Act 2 (35 P.S. § 6026.303(c)(1)) sets the maximum cancer risk threshold for each chemical under the Statewide health standard between 1 in 10,000 and 1 in 1,000,000. In the 1997 rulemaking adopting Chapter 250, the risk threshold for individual compounds under the Statewide health standard was set at 1 in 100,000 (25 Pa. Code § 250.306(d)). As explained in the final-form rulemaking published at 27 Pa.B. 4187 (August 16, 1997):

On final rulemaking, the Board has chosen the use of a cancer risk factor of 1×10^{-5} for the development of soil and groundwater medium-specific concentrations. 1×10^{-5} means there is risk of one excess cancer in 100,000 in the human population. This risk factor was chosen because it falls within the risk range identified in Act 2, and it has been adopted by several other states, including California, Indiana, Massachusetts and Michigan, for use in the development of cleanup standards. Although the Statewide health standard does not take into account cumulative effects, one could have up to 10 regulated substances at a given site and, if the Statewide health standards are used, the cumulative excess cancer risk level would still not exceed the 1 in 10,000 limit of the acceptable risk range in Act 2.

The Board has not included soil and groundwater standards based on the dermal absorption route of exposure. Soils contaminated by regulated substances that meet ingestion and inhalation based standards would not pose a substantive dermal risk because of low bioavailability, low moisture content of surface soils, and short exposure periods for actual adherence of soil to the skin. For sediments, exposure is less frequent and of shorter duration than soils. For groundwater, the ingestion and inhalation standards provide adequate protection from the dermal contact route of exposure.

While the Statewide health standard does not include the calculation or consideration of cumulative risk in the calculation of the soil direct contact MSC values, the target risk threshold is set to 1 in 100,000 to account for the probability of having more than one carcinogenic compound at a site. This threshold is ten times lower than the maximum acceptable risk level considered under the Statewide health standard (acceptable risk range of 1 in 10,000 to 1 in 1,000,000). 35 P.S. § 6026.303(c)(1). In setting a Statewide standard, DEP is unable to account for cumulative risks across carcinogens, outside of the ten-fold decrease in the threshold, because there is no way to accurately predict the combination of contaminants on a specific site.

Direct contact soil values are the lower of either the calculated ingestion numeric values (25 Pa. Code § 250.306), or the calculated particulate inhalation numeric values (25 Pa. Code § 250.307). The lower of the individual cPAH direct contact soil values were calculated using the ingestion equation in 25 Pa. Code § 250.306(b)(1), the default values listed in 25

Pa. Code § 250.306(d), and the toxicity values that were updated based on the CSSAB whitepaper and included in Table 5A of the proposed rulemaking.

The risk values calculated by the commentators used a comparison of the MSC values to the EPA Regional Screening Level (RSL) values. The RSL values are used by the EPA to help identify areas, contaminants and conditions that require further Federal evaluation at a particular site. As the EPA's website states "**The RSLs are not cleanup standards and should not be used as cleanup levels**" (*emphasis in original*). See <https://www.epa.gov/risk/regional-screening-levels-rsls>. These RSL values are calculated using multiple exposure routes (inhalation, ingestion, and dermal) while the direct contact MSC values are calculated by DEP in accordance with Act 2 and Chapter 250 using only one exposure route as explained above. The RSL values are screening values, not cleanup values, and cannot be compared directly to the MSC values because they include all exposure pathways and therefore will provide risk results that are biased high.

- 12. Comment:** An industry trade group expressed support for DEP's and the Cleanup Standards Scientific Advisory Board's approach to align with the EPA's approach for MSCs for cPAHs, which is also used by several other states. **(3)**

Response: The Department acknowledges this comment.

Changes to the Lead Direct Contact Soil Value

- 13. Comment:** A group of environmental and public health organizations commented that the proposed changes to the direct contact soil MSCs for lead are appropriate and based on the current EPA models and data. The Department should enact them to ensure protection of Pennsylvania residents by reducing routes of lead absorption by fetuses and children. **(5)**

Response: The Department acknowledges this comment. The lead MSCs are unchanged from the proposed rulemaking.

- 14. Comment:** IRRC noted several commentators' concern that the "Department is still behind the most recent science regarding lead pollution. The Department is proposing to adopt a target blood lead level (TBLL) of 5 micrograms per deciliter ($\mu\text{g}/\text{dL}$), but in 2021 the Center for Disease Control updated its blood lead reference value to 3.5 $\mu\text{g}/\text{dL}$. There is no safe level of lead consumption, and the Department should begin work to adopt a TBLL of 3.5 $\mu\text{g}/\text{dL}$." **(1, 6–19)**

Response: The EPA's latest Integrated Exposure Uptake Biokinetic (IEUBK) model and Adult Lead Model (ALM), along with their user guides, use a default TBLL of 5 $\mu\text{g}/\text{dL}$. DEP follows the EPA's Superfund Program closely and relies on its technical guidance when setting remediation standards for the Land Recycling Program. The Centers for Disease Control and Prevention's (CDC) blood lead reference value is not intended to be used as a health-based protection standard but is used by the CDC as a screening value for policy implementation purposes. The CDC uses the blood lead reference value to identify children in the higher range of the population's blood lead distribution for targeted prevention efforts and effectiveness evaluation. Due to these considerations, the EPA Superfund Program's

TBLL of 5 µg/dL is the appropriate value to use in calculating the lead direct contact soil numeric value, not the CDC's blood lead reference value of 3.5 µg/dL.

DEP has determined that a TBLL of 5 µg/dL remains protective of public health and safety using the analysis given in the white paper included with the proposed rulemaking, titled "Report of the Lead Workgroup to the Cleanup Standards Scientific Advisory Board." In that white paper, the CSSAB stated that, "The models used to calculate lead [direct contact soil numeric values] are multimedia models that include inputs of lead not just from contaminated soil, but also from air, drinking water, house dust, food and maternal blood. This is not the case with other regulated substances for which only inputs from soil are considered. The use of this multimedia pathway approach instead of focusing only on lead in soil unquestionably shifts the resultant [direct contact soil numeric values] in a more conservative direction." This inclusion of additional exposure routes provides a value that remains protective of human health and safety.

15. Comment: IRR comments "The Department proposes to add subparagraph (b)(1)(iv) [to 25 Pa. Code § 250.707], which states:

For sites with a release of lead or lead compounds that has been remediated to attain an MSC for lead based on an ingestion numeric value calculated in accordance with the requirements of 25 Pa. Code § 250.306(e) (relating to ingestion numeric values) and Appendix A, Table 7, the arithmetic average of all attainment samples, which shall be randomly collected in a single event from the site, shall be equal to or less than the applicable MSC.

Commenters assert that the Department should not add this subparagraph because all soil samples at a given site should be required to meet the Department's standards for lead contamination in soil. The commenters explain that this new language, which provides for samples to be 'randomly collected in a single event from the site' contradicts Section 250.703 which provides specific soil sampling procedures and allows the Department to require additional characterization if certain soil contamination conditions are met. Further, the commenters question whether a remediator could increase the number of samples at a site for the purpose of skewing the average of all attainment samples to make it appear that the samples show lead in an amount equal to or less than the applicable MSC. We ask the Board to explain how the statistical testing for lead or lead compounds in the final regulation protects the public health, safety, and welfare." (1, 6-19)

Response: DEP has proposed to add averaging as a statistical test for attainment because the EPA lead exposure models use averages in their methodology and their user guides state that average soil concentrations are the most appropriate data to use in the models. Averaging would be one option, but other statistical tests available under the Statewide health standard could also be used for lead in soil. Using averaging as an attainment test would be limited to only attaining the Statewide health standard for lead using the direct contact soil numeric value. The averaging test has the same limitations as the other statistical methods.

Per 25 Pa. Code § 250.703(b), samples to be used for attainment demonstration are required to be taken within an area where concentrations detected during characterization exceeded

the selected standard or within the excavation. In addition, 25 Pa. Code § 250.703(c) requires the samples to be used for attainment demonstration to be taken in a systematic random fashion. In addition, 25 Pa. Code § 250.703(c), explains that DEP may require additional characterization and remediation if three or more adjacent samples exceed the standard by more than 10 times. These provisions restrict the use of averaging to systematic random samples collected only from the area of remediation or the area of contamination, while not using samples from other areas of the site. In addition, if hot spots greater than ten times the standard are detected during the attainment sampling, then the characterization, remediation, and attainment process would begin again. The requirement that attainment samples must all be taken during one sampling event was added to prevent additional samples from being collected later in an effort to change the average. Collecting a statistically sufficient number of samples from the remediated area to calculate a representative average would also be required. The existing regulatory provisions in 25 Pa. Code § 250.703(b) and (c), in conjunction with the statistical averaging test, ensure that public health, safety and welfare are protected.

Miscellaneous

16. Comment: “The Bulletin posting did not include Tables 2 and 4B which had proposed changes.” (2)

Response: The commentator is referring to versions of Tables 2 and 4B, which were provided with the meeting materials for the Cleanup Standards Scientific Advisory Board (CSSAB) meeting on May 31, 2023. These versions of Tables 2 and 4B were used in the previous Chapter 250 rulemaking in 2021 but were inadvertently included with the 2023 CSSAB meeting materials. There are no proposed changes to Tables 2 and 4B for the current Chapter 250 rulemaking and, therefore, these two tables were not discussed at the May 31, 2023, CSSAB meeting. The EQB adopted the correct and complete version of the proposed regulation at its March 12, 2024, meeting and the correct version of the proposed Annex A was published in the *Pennsylvania Bulletin*.