

PROPOSED RULEMAKING

ENVIRONMENTAL QUALITY BOARD

[25 PA. CODE CH. 250]

Administration of the Land Recycling Program Vanadium MSC Rule

The Environmental Quality Board (Board) proposes to amend Chapter 250 (relating to administration of land recycling program). This rulemaking is proposed under § 250.11 (relating to periodic review of MSCs), which requires the Department of Environmental Protection (Department) to review new scientific information related to Statewide health standard medium-specific concentrations (MSC) at least 36 months after the effective date of the most recent promulgated MSCs and to propose to the Board any changes to the MSCs as necessary. This proposed rulemaking uses contemporary scientific information to update the toxicity value for vanadium, resulting in updates to the vanadium MSCs.

This proposed rulemaking was adopted by the Board at its meeting on May 18, 2022.

A. Effective Date

This proposed rulemaking will be effective upon final-form publication in the *Pennsylvania Bulletin*.

B. Contact Persons

For further information contact Michael Maddigan, Program Manager, Land Recycling Program, P.O. Box 8471, Rachel Carson State Office Building, Harrisburg, PA 17105-8471, (717) 772-3609, or Nikolina Smith, Assistant Counsel, Bureau of Regulatory Counsel, P.O. Box 8464, Rachel Carson State Office Building, Harrisburg, PA 17105-8464, (717) 783-8501. Information regarding submitting comments on this proposed rulemaking appears in section J of this preamble. Persons with a disability may use the Pennsylvania Hamilton Relay Service by calling (800) 654-5984 (TDD users) or (800) 654-5988 (voice users). This proposed rulemaking is available on the Department's web site at www.dep.pa.gov (select "Public Participation," then "Environmental Quality Board" and then navigate to the Board meeting of May 18, 2022).

C. Statutory Authority

This proposed rulemaking is authorized under sections 104(a) and 303(a) of the Land Recycling and Environmental Remediation Standards Act (Act 2) (35 P.S. §§ 6026.104(a) and 6026.303(a)), which direct the Board to adopt and amend periodically by regulation Statewide health standards for regulated substances for each environmental medium, including any health-based standards adopted by the Federal government by regulation or statute, and health advisory levels, and which direct the Board to promulgate appropriate mathematically valid statistical tests to define compliance with Act 2, and other regulations as necessary to implement the provisions of Act 2; and section 1920-A of The Administrative Code of 1929 (71 P.S. § 510-20), which authorizes the Board to formulate, adopt and promulgate rules and regulations that are necessary for the proper work of the Department.

D. Background and Purpose

The Commonwealth's Land Recycling Program, established by Act 2 (35 P.S. §§ 6026.101–6026.908), encourages the voluntary cleanup and reuse of contaminated commercial and industrial sites. It sets standards that are protective of human health and the environment and

which consider future use. It provides potential land developers with clear cleanup standards based on risk and provides an end to liability when that cleanup standard is achieved.

Act 2 and Chapter 250 do not create permitting or corrective action obligations; rather, they provide remediators with options to address contamination and any associated liability that arises under other statutes. To take advantage of the liability protection provided in Act 2, a person must remediate their site by selecting and attaining compliance with one or any combination of the following three environmental standards: background standard, Statewide health standard or site-specific standard. Chapter 250 contains tables of numeric values for contaminants in each environmental medium, including soil and groundwater. These numeric values are used by remediators to determine the MSCs at their sites and account for used and unused groundwater, as well as residential and nonresidential exposure factors. If the Statewide health standard is selected to attain compliance, the remediator must use the applicable MSCs to demonstrate attainment of the standard at the point of compliance.

Section 250.11 requires the Department to review new scientific information used to calculate MSCs under the Statewide health standard and propose appropriate changes at least every 36 months following the effective date of the most recently promulgated MSCs. The Board most recently promulgated MSCs that became effective upon publication of the final-form rulemaking at 51 Pa.B. 7173 (November 20, 2021). Based on new scientific information, this proposed rulemaking would update the vanadium toxicity value and the resulting Statewide health standard MSCs for vanadium.

This proposed rulemaking would impact any person addressing a release of vanadium at a property, whether voluntarily or by order of the Department. This proposed rulemaking would not add or create new regulatory obligations for any particular category of person. Under section 301(a) of Act 2 (35 P.S. § 6026.301(a)), a remediator has the authority to select a remediation standard of choice. To receive cleanup liability protection, remediators must comply with all of the applicable technical and administrative requirements of the selected remediation standard in accordance with section 501(a) of Act 2 (35 P.S. § 6026.501(a)).

As noted previously, this proposed rulemaking would not singularly affect one specific industry or person. This proposed rulemaking would impact the owners and operators of properties throughout this Commonwealth where vanadium has been released. Some of these properties may be owned or operated, or both, by small businesses. Because of the application of this proposed rulemaking, it is not possible to identify specifics on the types and numbers of small businesses that could potentially be affected by vanadium contamination. In addition, Act 2 and Chapter 250 are unique from other statutes and regulations because they do not create permitting or corrective action obligations. Rather, Act 2 and Chapter 250 provide remediators with options to address contamination and any associated liability that arises under other environmental statutes. Making changes to the MSCs in the Chapter 250 Appendix A does not create liability or obligations related to vanadium. Instead, a person's liability arises under other statutes, while Act 2 and Chapter 250 provide that person the means to resolve their

liability imposed by those statutes and to address the contamination. In this way, Act 2 and Chapter 250 do not create new obligations for a particular category of person in the way a new permitting obligation or corrective action regulation would.

The current vanadium oral reference dose provided in Chapter 250's Table 5B comes from United States Environmental Protection Agency's (EPA) Provisional Peer-Reviewed Toxicity Value (PPRTV) database which is considered a "Tier 2 Source" in § 250.605(a) (relating to sources of toxicity information). The PPRTV value for vanadium is based on a sodium metavanadate study and has generated a residential direct contact value that is near the lower end of the naturally occurring concentration range of vanadium in soil, according to a study by the United States Geological Survey. A cleanup value this low makes it difficult for remediators to determine if vanadium soil concentrations are naturally occurring or are related to a vanadium release at their site. Use of the PPRTV value has also impeded utilization of the Department's policy, titled "Management of Fill Policy," Document No. 258-2182-773.

These proposed numeric value increases reflect updated scientific information related to the toxicity of vanadium and accurately align with the risk from exposure. The EPA has determined that there is a high level of uncertainty associated with the development of the PPRTV toxicity value, which is why it is so low. The alternative to using the PPRTV toxicity value for vanadium is to use the EPA's Integrated Risk Information System (IRIS) vanadium pentoxide value and apply a molecular weight conversion. The PPRTV value is based on a sodium metavanadate study and it can only be used as an elemental vanadium value because of the molecular weight conversion done in the study. The IRIS vanadium pentoxide value is a vanadium compound value that, by using the same molecular weight conversion, can also be used as an elemental vanadium value. The only difference is that the Department has performed the molecular weight conversion. The IRIS value is preferred over the PPRTV value because it has less uncertainty associated with it and it is a "Tier 1 Source" for toxicity values according to § 250.605(a), which means it has gone through a more rigorous peer review process. The EPA has endorsed the use of the IRIS vanadium pentoxide value in conjunction with a molecular weight conversion by using it to develop their vanadium Regional Screening Level.

The Department consulted with the Cleanup Standards Scientific Advisory Board (CSSAB) during the development of this proposed rulemaking. The CSSAB, which was established by section 105 of Act 2 (35 P.S. § 6026.105), consists of persons representing a cross-section of experience, including engineering, biology, hydrogeology, statistics, medicine, chemistry, toxicology and other related fields. The purpose of the CSSAB is to assist the Department and the Board in developing Statewide health standards, determining the appropriate statistically and scientifically valid procedures and risk factors to be used, and providing other technical advice as needed to implement Act 2. The Department presented this proposed rulemaking to the CSSAB for its review at a meeting held on October 4, 2021. The Department received a unanimous letter of support for this proposed rulemaking from the CSSAB on October 12, 2021.

E. Summary of Regulatory Requirements

Chapter 250 Appendix A, Tables 2, 4A, 4B and 5B

Proposed amendments to the "Medium-Specific Concentrations" tables include updates to the groundwater

(Table 2), soil direct contact (Table 4A) and soil-to-groundwater (Table 4B) vanadium numeric values. Proposed amendments to the Physical and Toxicological Properties for Inorganic Regulated Substances (Table 5B) table include an updated toxicity value for vanadium. Additionally, a footnote is proposed to be added to Table 5B explaining that the updated vanadium toxicity value is derived from the oral reference dose for vanadium pentoxide from the EPA's IRIS database with the application of a molecular weight conversion.

F. Benefits, Costs and Compliance

Benefits

When the General Assembly enacted Act 2, it found and declared among its policy goals in section 102 of Act 2 (35 P.S. § 6026.102) that "[p]ublic health and environmental hazards cannot be eliminated without clear, predictable environmental remediation standards and a process for developing those standards," that "[a]ny remediation standards adopted by this Commonwealth must provide for the protection of public health and the environment," and that "[c]leanup plans should be based on actual risk that contamination on the site may pose to public health and the environment, taking into account its current and future use and the degree to which contamination can spread offsite and expose the public or the environment to risk[.]"

To implement these policy goals, the General Assembly granted the Board the rulemaking authority in sections 104 and 303 to develop Statewide health standards and the methods to calculate those standards. Chapter 250 implements Act 2 consistent with the General Assembly's declaration of policy outlined in section 102 of Act 2.

The amendments to the MSCs in this proposed rulemaking would serve both the public and the regulated community because they would provide MSCs based on the most up-to-date health and scientific information for vanadium. Section 104(a) directed the Board to adopt regulations needed to implement Act 2 and granted the Board the rulemaking authority to amend those standards periodically as better science becomes available and as the need for clarification or enhancement of the program becomes apparent. Accordingly, when the Board first promulgated Chapter 250 at 27 Pa.B. 4181 (August 16, 1997), the intent of the General Assembly was for the Board to update and amend those standards as necessary.

Potential contamination of soil and groundwater from accidental spills and unlawful disposal may impact residents of this Commonwealth. Vanadium is a systemic toxicant (non-carcinogen) as defined under Act 2 and its release not only poses a threat to the environment, but also may affect public health. Research on vanadium is continuous and provides the basis for the protection of Commonwealth residents through site cleanup requirements.

The proposed update to the vanadium toxicity value would result in proposed increases to the vanadium MSC numeric values. Value increases reflect updated scientific information related to the toxicity of vanadium and recognize that the updated values accurately align with the risk from exposure. Value increases can also prevent impracticable remediation requirements for sites where existing vanadium standards for sites where existing vanadium standards are lower than naturally occurring concentrations.

The benefits of this proposed rulemaking are difficult to quantify because, unlike other statutory or permitting structures, Act 2 does not prevent contamination but instead provides remediators with a variety of options to

addresses sites with existing contamination. In that sense, this proposed rulemaking, consistent with Act 2, benefits the public because it may reduce harmful exposure and result in efficient and expedient remediation and reuse of contaminated sites.

Compliance costs

The Department believes this proposed rulemaking will result in positive economic impacts because the proposed MSCs more accurately align with exposure risk and prevent impracticable remediation requirements for a site where existing vanadium standards are lower than naturally occurring concentrations. The number of completed remediations varies each year but on average, remediators apply the Act 2 remediation standards to approximately 800 contaminated properties across this Commonwealth per year. The Department does not expect that the proposed amendments would impact the number of remediations voluntarily completed or the number that must be completed as a result of Department enforcement actions.

The proposed updates to the vanadium Statewide health standard MSCs would not affect the cleanup options available to remediators under other cleanup standards. Persons conducting remediation under Act 2 may choose from three different cleanup standards: background, Statewide health or site-specific.

Compliance assistance plan

The Land Recycling Program disseminates information related to these updates using the Department web site and e-mails to environmental consultants and stakeholders involved in the program.

Paperwork requirements

This proposed rulemaking would not result in any additional forms or reports, beyond those already required by Act 2 and Chapter 250.

G. Pollution Prevention

The Federal Pollution Prevention Act of 1990 (42 U.S.C.A. §§ 13101–13109) established a National policy that promotes pollution prevention as the preferred means for achieving state environmental protection goals. The Department encourages pollution prevention, which is the reduction or elimination of pollution at its source, through the substitution of environmentally friendly materials, more efficient use of raw materials and the incorporation of energy efficiency strategies. Pollution prevention practices can provide greater environmental protection with greater efficiency because they can result in significant cost savings to facilities that permanently achieve or move beyond compliance.

Act 2 encourages cleanup plans with remedy goals which treat, destroy or remove regulated substances whenever technically and economically feasible. This proposed rulemaking provides the necessary Statewide health standard MSCs for remediators to remove contamination or eliminate exposure, where appropriate. In particular, this proposed rulemaking reflects the most up-to-date science, especially as it relates to the characterization and removal of contamination that exceeds Act 2 MSCs. During the remediation of a contaminated site, potential sources of pollution are often removed to attain the Act 2 standards, thus eliminating or minimizing the potential for continued migration of the sources of pollution to other areas.

H. Sunset Review

The Board is not establishing a sunset date for this proposed regulation because the requirements are needed for the Department to carry out its statutory authority.

I. Regulatory Review

Under Section 5(a) of the Regulatory Review Act (71 P.S. § 745.5(a)), on July 12, 2022, the Department submitted a copy of these proposed amendments to the Independent Regulatory Review Commission (IRRC) and the Chairpersons of the House and Senate Environmental Resources and Energy Committees. In addition to submitting the proposed amendments, the Department has provided IRRC and the Committees with a copy of a detailed regulatory analysis form prepared by the department. A copy of this material is available to the public upon request.

Under section 5(g) of the Regulatory Review Act, IRRC may convey any comments, recommendations or objections to the proposed regulations within 30 days of the close of the public comment period. The comments, recommendations or objections shall specify the regulatory review criteria that have not been met. The Act specifies detailed procedures for review of these issues by the Department, the General Assembly, and the Governor prior to final publication of the regulations.

J. Public Comments

Interested persons are invited to submit written comments, suggestions, support or objections regarding this proposed rulemaking to the Board. Comments, suggestions, support or objections must be received by the Board by August 29, 2022.

Comments may be submitted to the Board online, by e-mail, by mail or express mail as follows. Comments submitted by facsimile will not be accepted.

Comments may be submitted to the Board by accessing eComment at <http://www.ahs.dep.pa.gov/eComment>. Comments may be submitted to the Board by e-mail at RegComments@pa.gov. A subject heading of this proposed rulemaking and a return name and address must be included in each transmission.

If an acknowledgement of comments submitted online or by e-mail is not received by the sender within 2 working days, the comments should be retransmitted to the Board to ensure receipt.

Written comments should be mailed to the Environmental Quality Board, P.O. Box 8477, Harrisburg, PA 17105-8477. Express mail should be sent to the Environmental Quality Board, Rachel Carson State Office Building, 16th Floor, 400 Market Street, Harrisburg, PA 17101-2301.

K. Public Hearings

If sufficient interest is generated as a result of this publication, a public hearing will be scheduled to receive additional comments.

RAMEZ ZIADEH, P.E.,
Acting Chairperson

Fiscal Note: 7-572. No fiscal impact; (8) recommends adoption.

Annex A

TITLE 25. ENVIRONMENTAL PROTECTION

PART I. DEPARTMENT OF ENVIRONMENTAL PROTECTION

Subpart D. ENVIRONMENTAL HEALTH AND SAFETY

ARTICLE VI. GENERAL HEALTH AND SAFETY

CHAPTER 250. ADMINISTRATION OF LAND RECYCLING PROGRAM

Appendix A
Table 2—Medium-Specific Concentrations (MSCs) for Inorganic Regulated Substances in Groundwater

Regulated Substance	CASRN	Used Aquifers						Nonuse Aquifers					
		TDS ≤ 2500 mg/L		TDS > 2500 mg/L		R	NR	R	NR				
		R	NR	R	NR								
VANADIUM	7440-62-2	[2.4] 170	G	[6.8] 490	G	[240] 17,000	G	[680] 49,000	G	[2,400] 170,000	G	[6,800] 490,000	G
			*	*	*	*	*	*	*	*	*	*	*
			*	*	*	*	*	*	*	*	*	*	*

All concentrations in µg/L (except asbestos)
M = Maximum Contaminant Level
H = Lifetime Health Advisory Level
SMCL = Secondary Maximum Contaminant Level
G = Ingestion
N = Inhalation
PA State MCL adopted as MSC for Copper and Lead
R = Residential
NR = Nonresidential

Table 4—Medium-Specific Concentrations (MSCs) for Inorganic Regulated Substances in Soil
A. Direct Contact Numeric Values

REGULATED SUBSTANCE	CASRN	Residential MSC 0—15 feet		Nonresidential MSCs			
		Surface Soil 0—2 feet	Subsurface Soil 2—15 feet	Surface Soil 0—2 feet	Subsurface Soil 2—15 feet		
VANADIUM	7440-62-2	[15] 1,100	G	[220] 16,000	G	190,000	C
	*	*	*	*	*	*	*

All concentrations in mg/kg

- R—Residential
- NR—Non-Residential
- G—Ingestion
- N—Inhalation
- C—Cap
- U—UBK Model
- S—SEGH Model
- NA—Not Applicable

**Table 4—Medium-Specific Concentrations (MSCs) for Inorganic Regulated Substances in Soil
B. Soil to Groundwater Numeric Values¹**

REGULATED SUBSTANCE	CASRN	Used Aquifers												Soil Buffer Distance (feet)	
		TDS ≤ 2500 mg/L						TDS > 2500 mg/L							
		R			NR			R			NR				
		100 X GW MSC	Generic Value	100 X GW MSC	Generic Value	100 X GW MSC	Generic Value	100 X GW MSC	Generic Value	100 X GW MSC	Generic Value	100 X GW MSC	Generic Value		
VANADIUM	7440-62-2	[0.24] 17	[240] 17,000	[0.68] 49	[680] 49,000	124] 1,700	[24,000] 190,000	[68] 4,900	[68,000] 190,000	[240] 17,000	[680] 49,000	[1240] 190,000	[680] 49,000	190,000	5
		* * *	* * *	* * *	* * *	* * *	* * *	* * *	* * *	* * *	* * *	* * *	* * *		

¹For other options see § 250.308 (relating to soil to groundwater pathway numeric values)

All concentrations in mg/kg

R—Residential

NR—Non-Residential

NA—Not Applicable

**Table 5—Physical and Toxicological Properties
B. Inorganic Regulated Substances**

<i>Regulated Substance</i>	<i>CAS</i>	<i>RfDo (mg/kg-d)</i>	<i>CSFo (mg/kg-d)⁻¹</i>	<i>RfCi (mg/m³)</i>	<i>IUR (ug/m³)⁻¹</i>	<i>Kd</i>
		* * * * *				
VANADIUM	7440-62-2	[0.00007] 0.005		0.0001	D	1,000
		* * * * *	[P] Id			
		* * * * *				

Toxicity Value Sources:
 C = California EPA Cancer Potency Factor
 D = ATSDR Minimal Risk Level
 H = Health Effects Assessment Summary Table (HEAST)
 I = Integrated Risk Information System (IRIS)
 P = EPA Provisional Peer-Reviewed Toxicity Value
 X = EPA Provisional Peer-Reviewed Toxicity Value Appendix
Id = IRIS derived—Value derived from the IRIS oral RfD for Vanadium Pentoxide (0.009 mg/kg-day). Vanadium constitutes 56% of the molecular weight of the Vanadium Pentoxide molecule. 0.009 mg/kg-day × 0.56 = 0.005 mg/kg-day.

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