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November 18, 2019

**VIA ELECTRONIC SUBMISSION @ <https://www.ahs.dep.pa.gov/eComment/>**

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Policy Office  
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**Re: Comments to Draft TGD  
Radioactivity at Solid Waste Processing and Disposal Facilities  
DEP ID: 250-3100-001**

Dear Ms. Hoffman:

The Pennsylvania Independent Oil & Gas Association (PIOGA) respectfully submits the following comments to the PA Department of Environmental Protection's (PA DEP) Draft TGD: Radioactivity at Solid Waste Processing and Disposal Facilities (250-3100-001). Our organization supports the development of a useable and reasonable Guidance Document for Radiation Action Protection Plans for all industries; however, we are submitting the following comments and concerns on the current draft TGD to remove or mitigate these negative effects.

PIOGA is a nonprofit trade association, with nearly 500 members, representing Pennsylvania independent oil and natural gas producers, marketers, service companies and related businesses, landowners and royalty owners. PIOGA members are subject to provisions of Pennsylvania's Oil and Gas Act (Act 13, Chapter 32), Solid Waste Management Act, Clean Streams Law, Land Recycling and Environmental Remediation Standards Act, and numerous federal environmental statutes and implementing regulations applicable to oil and gas operations in Pennsylvania. The association and our members therefore have a direct interest in the draft TGD.

Although we agree and support fellow industry trade organizations' comments concerning the draft TGD, we have noted several differences as outlined below due to our association's also representing the conventional oil and natural gas industry.

## General Comments

### 1. General Purpose:

The general purpose of the Draft TGD is to uniformly apply the same rules and guidance on how to prepare RP Action Plans in order to assist affected industries in ensuring the protection of worker health, the public and the environment regarding Radioactive Material (RAM).

Section 78a.58(d) of PA DEP's regulations (relating to unconventional wells) require that *"An operator processing fluids or drill cuttings generated by the development, drilling, stimulation, alteration, operation or plugging of oil or gas wells shall develop an action plan specifying procedures for monitoring for and responding to radioactive material produced by the treatment processes, as well as related procedures for training, notification, recordkeeping and reporting. The action plan shall be prepared in accordance with the Department's Guidance Document on Radioactivity Monitoring at Solid Waste Processing and Disposal Facilities, Commonwealth of Pennsylvania, Department of Environmental Protection, No. 250-3100-001, as amended and updated, or in a manner at least as protective of the environment, facility staff and public health and safety and which meets all statutory and regulatory requirements."*

The regulation specifically states that those who are performing the listed activities shall prepare a plan in accordance with the TGD. It does not state that the TGD must be written to single out the oil and natural gas industry. This draft TGD has singled out the oil and gas industry by making dozens of references to our industry and its operations. Prior to this revision, and in this revision, no other industry is singled out as oil and gas, which is evident in the "Policy," "Purpose" and "Applicability" sections on the first page. Although the TGD mentions certain areas of concern such as medical waste and smoke detectors, it does not single them out in the Policy, Purpose and Applicability sections. Therefore, PIOGA recommends both in these sections and throughout the TGD that the Department remove references which specifically single out our industry. The focus should be on the level of radioactivity, not the source of the waste.

#### Current draft TGD:

**POLICY:** To protect the environment and the public health, safety, and welfare from the possible dangers of radioactive material that is delivered to waste processing or disposal facilities or generated by the exploration or development of oil and gas wells.

**PURPOSE:** This guidance document is intended to assist the solid waste and oil and gas regulated communities with the development of Radiation Protection Action Plans as required in the regulations.

**APPLICABILITY:** This guidance document applies to all owners and operators of solid waste processing and disposal, oil and gas well development, and waste treatment facilities that are required by regulation to monitor for radiation from incoming loads of waste, and to those facilities that choose to monitor even though not required. This guidance document also applies to all Department personnel and activities involved with waste facility permitting, operations and enforcement, radiation protection, grants, monitoring, administration, and emergency response.

### Suggested change to TGD

**POLICY:** To protect the environment and the public health, safety, and welfare from the possible dangers of radioactive material that is delivered to landfills, waste processing or disposal facilities.

**PURPOSE:** This guidance document is intended to assist the regulated communities with the development of Radiation Protection Action Plans as required in the regulations.

**APPLICABILITY:** This guidance document applies to all owners and operators of solid waste processing and disposal facilities that are required by regulation to monitor for radiation from loads of waste, and to those facilities that choose to monitor even though not required. This guidance document also applies to all Department personnel and activities involved with waste facility permitting, operations and enforcement, radiation protection, grants, monitoring, administration, and emergency response.

Further comments: the above specifically references “unconventional” operations yet in the section referring to the TENORM Study (III.B) there is a mention of “conventional” operations. There is nothing in statute that specifically requires that this document

## **2. Definitions:**

**“FACILITY”** - The TGD defines the term “Facility” by listing general activities and structures that must follow the TGD. However, the TGD again singles out the oil and gas industry by making up its own list of activities rather than those that are required under 25 Pa. Code 78a.58(d). Furthermore, rather than create a new term, DEP should use the definition in the Solid Waste Management Act. Therefore, PIOGA suggests the following change:

### Current draft TGD:

Facility: Land, structures, and other appurtenances or improvements where municipal, residual, or oil and gas waste disposal or processing is permitted or takes place. The term includes land thereby used or affected during the lifetime of operations, including areas where solid or oil and gas waste management actually occurs, support facilities, offices, equipment sheds, air and water pollution control and treatment systems, access roads, associated onsite or contiguous collection, transportation and storage facilities, closure and post-closure care and maintenance activities, contiguous borrow areas, and other activities in which the natural land surface has been disturbed or used as a result or incidental to operation of the facility.

### Suggested change to TGD:

"Facility." All land, structures and other appurtenances or improvements where municipal or residual waste disposal or processing is permitted or takes place, or where hazardous waste is treated, stored or disposed.

**“TENORM”** - Though we recognize that including the “potential for human exposure” being increased is consistent with the existing PADEP regulatory definition in Chapter 287, we question why construction materials such as brick, granite, wall board, etc., and related building rubble doesn’t generally appear to be classified as TENORM in PA (as are oil & gas drill cuttings), but rather still referred to as NORM (for example on page 36). We recommend that the definition of TENORM in PA should be limited to NORM

with increased concentrations of radionuclides due to human activities, consistent with the CRCPD's Suggested State Regulations, Part N definition.

Suggested change to TGD:

Technologically enhanced naturally occurring radioactive materials. It is naturally occurring radioactive material not specifically subject to regulation under the laws of the Commonwealth or Atomic Energy Act of 1954 (42 U.S.C. §§ 2011 et seq.), but whose radionuclide concentrations or potential for human exposure have been increased above levels encountered in the undisturbed natural environment by human activities. When disposed, TENORM-containing wastes are managed under the Solid Waste Management Act (SWMA).

**3. Background:**

**a. II. Technical Guidance A. Background (Paragraph 1)**

When disposed, NORM & TENORM are regulated by DEP's Bureau of Waste Management (BWM) (regardless of concentration or dose). Therefore, it is not correct to say, as drafted, that "NORM and TENORM are not regulated in Pennsylvania unless resulting radiation doses exceed the limits set forth in Title 25, Chapter 219."

Based on the Table 2 at 25 Pa. Code 217.137, it appears Ra-228 should be included here as well.

Suggested change to TGD:

Except for waste materials, NORM and TENORM are not regulated in Pennsylvania unless resulting radiation doses exceed the limits set forth in Title 25, Chapter 219 of the Pennsylvania Code. However, in the case of radium-226 and radium-228, DEP does regulate individual discrete sources above 0.1 microcurie ( $\mu\text{Ci}$ ), as set forth in 25 Pa. Code Chapter 217.

**b. II. Technical Guidance A. Background (Paragraph 6 & 7)**

Paragraph 6 lists applicable regulations that are affected by this policy. Paragraph 7 again singles out the oil and gas industry. To be consistent, Paragraph 7 should be eliminated by including the citation reference as another bullet point in Paragraph 6.

Suggested change to TGD:

- Relating to Unconventional wells (25 PA Code 78a.58(d))

**c. II. Technical Guidance A. Background (Paragraph 9)**

"The facility should have access to equipment with the ability to characterize and identify isotopes." This implies that all facilities would be required to have or have immediate access to a very expensive piece of equipment that may not be necessary to properly characterize the waste. Waste material with known isotopes (Radium-226 and 228) may be able to be characterized with gamma radiation detection devices or via third party laboratory analysis.

[Suggested change to TGD:](#)

Operators of affected facilities must comply with the applicable regulatory requirements, and in lieu of laboratory analysis to characterize the waste, the facility should have access to equipment with the ability to properly characterize the waste, and have an appropriate Radiation Protection Action Plan (RP Action Plan) that is developed in accordance with this policy and approved by DEP (except that DEP approval is not required for unconventional well operators operating under 25 Pa. Code 78a.58(d) ) or in a manner at least as protective of the environment, facility, staff and public health and safety and meets all statutory and regulatory requirements.

**d. II. Technical Guidance A. Background (Paragraph 9)**

The TGD states that “For Pennsylvania facilities that are not required to monitor for RAM (e.g., metal recyclers) but choose to do so as a best management practice, this guidance document *should* also be followed. This guidance is intended to assist the solid waste and O&G regulated communities with the development of RP Action Plans.” PIOGA recommends that the word “should” above be changed to “may” because by using the term “should” creates a requirement for a facility to use this TGD when the facility is not required to monitor.

**4. II. Technical Guidance B. Radiation Protection Action Plans**

**a. II. Technical Guidance B. Radiation Protection Action Plans (Paragraph 4)**

The following sentence “However, DEP cautions O&G well development and wastewater treatment operators to fully evaluate the levels of RAM (e.g., radium-226) in fluids and sludges.” Implies that O&G operators do not properly characterize their waste. It is the responsibility of a generator to properly characterize their waste, if the Department suspects a generator is not properly characterizing their waste, they should pursue corrective actions with that specific generator.

[Suggested change to TGD:](#)

Delete the following sentence: “However, DEP cautions O&G well development and wastewater treatment operators to fully evaluate the levels of RAM (e.g., radium-226) in fluids and sludges.”

**b. II. Technical Guidance B. Radiation Protection Action Plans (Paragraph 5)**

Updating a RP Action Plan through a permit modification is not practical for General Permits (i.e., WMGR123 permits) that do not allow for minor and major modifications. Current regulations do not parse out, for general permits, the difference between something that might be considered a major modification vs. a minor modification like with individually permitted facilities, therefore a GP modification requires a substantial submittal document from the facility.

A RP Action Plan would not necessarily be part of a “permit” for unconventional wells sites for the entire life of the well but would be a regulatory requirement to operate in accordance with the required plan.

78a.58 doesn’t require approval of a RP Action Plan.

[Suggested change to TGD:](#)

RP Action Plans become part of the facility's permit or regulatory requirements and should be followed by the facility. For facilities required to have an RP Action Plan under the solid waste regulations, revisions to an approved RP Action Plan should also be approved by DEP through a permit modification, per the solid waste regulations.

**5. II. Technical Guidance C. Dose Limits for the Public and Workers (Paragraph 1)**

**a. II. Technical Guidance C. Dose Limits for the Public and Workers (Table)**

Is there a PA statutory or regulatory basis for requiring this to be 25 mrem for the general public dose limit from a facility? If so, that statutory or regulatory citation should be specified. If not, we recommend that this 25 mrem be changed to 100 mrem, consistent with the Federal standard for general public dose limit at 10 CFR 20.1301(a)(1), and 25 Pa. Code 219.51 which incorporates that 10 CFR 20 standard by reference. [The 25 mrem/yr appears as though it might be based on the 10 CFR 20.1402 limit for releasing sites for unrestricted use, but that isn't the correct scenario or standard for this limit that refers to the general public dose limit from an operating facility]

**b. II. Technical Guidance C. Dose Limits for the Public and Workers (Final Paragraph)**

This paragraph discusses modeling for potential radiation exposure pathways for RP Action Plans. Oil & Gas Waste Processing should not have to model for exposure potential at each well pad. TENORM is not being disposed of on a well pad, it is being gathered, monitored and transported from the sites to appropriate disposal locations. Remove "and O&G operations" from the first paragraph.

[Suggested change to TGD:](#)

In all reviews of RP Action Plans, DEP will perform evaluations to ensure solid waste processing or disposal operations do not endanger the environment, facility staff, or public health and safety. Therefore, RP Action Plans should describe the potential radiation exposure pathways for workers and members of the general public.

**6. II. Technical Guidance D. Detection of Radiation (last paragraph)**

This last paragraph of this section states:

*2. Action Level Two: Radiation dose rates of 20  $\mu\text{Sv/hr}$  (2 mrem/hr) or greater in the cab of the waste transport vehicle, 500  $\mu\text{Sv/hr}$  (50 mrem/hr) or greater from any other surface, or the detection of contamination on the outside of the vehicle requires immediate notification to DEP and isolation of the vehicle.*

*An RP Action Plan should provide for immediate notification to DEP for conditions specified in the regulations (i.e., radiological conditions noted above in Action Level Two). When prohibited or licensed RAM is detected or when a waste load is to be rejected, a DOT Special Permit must be issued in order for the load to travel public roads to the destination.*

By requiring that when a waste load is rejected that it must be issued a DOT Special Permit to travel on

the roads is not justified. A waste load could be "rejected" from a landfill because the landfill met or is getting close to the monthly TENORM allocation limits, even with prior coordination, or a load could be rejected at a waste processing facility because the material does not meet their acceptance criteria that doesn't have anything to do with the TENORM level. A load that does not trigger an action level may not need special DOT permitting to simply be taken to another disposal location.

Suggested change to TGD:

When prohibited or licensed RAM is detected, and the waste load is rejected because its prohibited, a licensed RAM or because it exceeds Action Level Two, a DOT Special Permit must be issued in order for the load to travel public roads to the destination unless the waste load is transported as Class 7 Radioactive Waste.

Additional comments:

We note that DEP has used the term DOT Special Permit as a replacement to DOT Exemption. Is this a new thing? The accepting party of the waste must still seek DEP approval of a DOT Exemption Form if it must reject a load of TENORM waste. A DOT Special Permit sounds more involved. These facilities should not have to go through needless permit modifications to address this new policy, in whatever final form it takes.

We suggest that rather than use this new term DOT Special Permit that it uses the already existing term "DOT Exemption" form in all of the places where this is mentioned.

**7. III. Identification and Disposition of RAM Found in a Waste Stream –**

**a. B. RAM From TENORM-containing Wastes (Paragraph 1)**

Same comment as at the definition of TENORM.

Does this mean TENORM is not regulated under the 25 Pa. Code Chapters 217 to 220 regulations previously referenced in this document? If so, that should be made clearer such as by adding a parenthetical citing the BRP regulatory sections that are not applicable to TENORM; e.g. 25 Pa. Code Chapters 215 to 240, if that's what this means.

**b. B. RAM From TENORM-containing Wastes (Paragraph 2)**

Update bulleted list (a-f) to be consistent with RWC 800 series language. Additionally, well pad liners do not have potential to contain TENORM, only TENORM containing materials on the surface of the liner may contain TENORM, remove from list.

Suggested change to TGD:

- a. RWC 810 - Drill cuttings
- b. RWC 802 - Produced Fluid
- c. RWC 804 – Wastewater Treatment Sludge

- d. RWC 812 – Filter Socks
- e. Other waste materials impacted by above listed wastes

**c. III. Identification and Disposition of RAM Found in a Waste Stream B. RAM From TENORM-containing Wastes (Paragraph 5)**

This paragraph is an unnecessary repetition of information already in the document elsewhere, please remove. If not removed update language to be consistent with Guidance Document.

[Suggested change to TGD:](#)

Facilities that process oil and gas liquid waste for reuse or disposal may generate higher volumes and activity levels of TENORM. For this reason, facilities that process oil and gas liquid waste should utilize standard gamma spectroscopy methods to assay waste prior to transport on public roads in accordance with the facility's RP Action Plan.

**d. III. Identification and Disposition of RAM Found in a Waste Stream B. RAM From TENORM-containing Wastes (Last Paragraph)**

The first sentence "Landfills that accept TENORM-containing waste for disposal should provide justification in the proposed RP Action Plan demonstrating that it can adequately handle TENORM-containing waste, taking into consideration the facility's design and operational plan (e.g., considering the facility's engineered barriers, leachate collection and treatment, and environmental monitoring) and apply for approval to dispose of TENORM-containing waste at the facility through a permit modification." is not practical or make sense as how can a landfill be required to factor an unknown amount? Furthermore, DEP imposes a monthly allocation system for the acceptance of TENORM material which is updated as needed. Therefore, this first sentence should be deleted.

**8. III. Identification and Disposition of RAM Found in a Waste Stream E. RAM From TENORM-containing Wastes (Paragraph 1)**

A waste load could be "rejected" from a landfill because the landfill met or is getting close to the monthly TENORM allocation limits, even with prior coordination, or a load could be rejected at a waste processing facility because the material does not meet their acceptance criteria that doesn't have anything to do with the TENORM level. A load may not need a special DOT permit nor approval from the Department to simply be taken to another disposal location if characterization data identifies the waste below the DOT threshold of 270pCi/g.

[Suggested change to TGD:](#)

A facility may accept waste containing RAM in accordance with this policy and the facility's approved RP Action Plan, or it can choose to reject any waste load containing DOT prohibited or licensed RAM. If rejected because its DOT prohibited, a licensed RAM or it exceeds Action Level Two, then the vehicle or vessel containing RAM cannot leave the facility without written approval from the Radiation Health Physicist in DEP's Regional Office having jurisdiction over the facility and an authorized DOT Special Permit. If the driver of the vehicle does not comply with this requirement, the Radiation Health Physicist in DEP's Regional Office having jurisdiction over the facility and the Pennsylvania State Police

should be immediately notified and provided the vehicle's license plate number.

### **9. III. Identification and Disposition of RAM Found in a Waste Stream F. Records and Reports**

#### **a. F.1 (Paragraph 1)**

Remove "O&G processor" as this term is not defined and unnecessary.

#### [Suggested change to TGD:](#)

Overview: Each person or municipality who operates a waste processing or disposal facility that receives waste from offsite and that has detected radioactive materials with radiation levels in excess of Action Level One to cause an alarm should maintain records of each incident, containing the information set forth in Section F.2. below in the facility's daily operational record.

#### **b. F.2 (g)**

This section states that "g) For rejected waste loads, a record of each rejected load and the reason for the rejection. Facilities are required to complete and submit supplemental waste tracking forms in accordance with Section E above relating to rejecting waste loads containing RAM from any source." To be consistent and for clarity with the other sections, at the end of this sentence the Department should add "that exceeds its Action Level Two limits."

#### [Suggested change to TGD:](#)

g) For rejected waste loads, a record of each rejected load and the reason for the rejection. Facilities are required to complete and submit supplemental waste tracking forms in accordance with Section E above relating to rejecting waste loads containing RAM from any source that exceeds its Action Level Two limits.

**c. F.4 (Paragraph 1)**

Chapter 78a. 58(d) does not require an annual report for radioactive materials as acknowledged by Appendix A of this Guidance Document (Appendix A does not list Chapter 78a as calling for an annual operation report). Additionally, any TENORM is ultimately disposed of at a landfill who is also tracking the amount of material; so annual reports by oil and gas operations would double count the same material that landfills are already reporting.

[Suggested change to TGD:](#)

Annual Operation Report: Operators of municipal and residual waste processing or disposal facilities may be required to submit to DEP an annual operation report in accordance with 25 Pa. Code § 273.313 or 25 Pa. Code § 288.283 (relating to annual operation report). The Annual Operation Report should include a record of all detected RAM and summarize the information required in the daily operational records. A letter should be provided to DEP if no radioactive materials are found during the reporting year.

**10. Appendix A. Radiation protection action plan (a)**

(a) should be re-written since 78a.58(d) may not require monitoring for radioactive material entering an oil and gas operation but rather material generated at and leaving for disposal.

[Suggested change to TGD:](#)

The action plan should specify the procedures for monitoring for and responding to radioactive material entering the facility (or in the case of unconventional well sites regulated under § 78a.58(d), for monitoring and responding to radioactive material produced by the treatment processes), as well as related procedures for training, notification, recordkeeping and reporting.

**11. Appendix A. Radiation protection action plan (c)**

What is meant by the statement, "(c) The action plan shall be incorporated into the landfill's approved waste analysis plan"? This reference does not appear to be related to oil and gas operations so it should be reworded.

A landfills action plan shall be incorporated into its approved waste analysis plan.

**12. Appendix A. Radiation monitoring and response (g)**

"(g) If radioactive material is detected, the vehicle containing the radioactive material may not leave the facility without written DEP approval and an authorized federal DOT Special Permit." We do not believe this is appropriate for oil and gas operations. The purpose of this statement is if unknown RAM is detected in a conveyance. In the event known RAM is being shipped, you are not required to get PA DEP approval and a DOT special permit. This would be a requirement if radiation levels were prohibited or it was licensed RAM.

[Suggested change to TGD:](#)

If DOT prohibited or licensed RAM is detected, the vehicle containing the radioactive material may not

leave the facility without written DEP approval and an authorized federal DOT Special Permit.

### **13. Appendix D. 2. Facility Monitoring (Paragraph 1)**

Remove “O&G operations” because fixed portal meters may be used. Further update last sentence to include incoming and outbound waste loads. O&G operations may not survey inbound waste loads.

#### [Suggested change to TGD:](#)

The waste load portal detectors are normally scintillation type detectors. In the scenario where time permits (e.g., waste loads are infrequent) or fixed portal monitors become inoperable, hand-held microR meters may be used to scan incoming or outbound waste loads.

### **14. Appendix D. 3. Monitoring Equipment (A.)**

Remove “O&G operations”, monitoring equipment is not required or necessary at all types of O&G operations.

#### [Suggested change to TGD:](#)

A. The monitoring equipment used at solid waste and facilities should be calibrated no less frequently than annually, and (if utilized) its function should be tested daily using a check source for which the instrument’s expected response has been previously determined.

### **15. Appendix D. 3. Monitoring Equipment (B.)**

Fixed monitoring equipment would generally not be necessary at 78a.58(d) well site processing operations, which may be temporary or only periodic in nature.

Paragraph I. below says “to approximately 100 mrem/hr.” Suggest being consistent between B. & I.

#### [Suggested change to TGD:](#)

Monitoring equipment should include portable (hand-held) equipment, and for certain facilities, such as facilities receiving incoming loads, fixed radiation monitoring equipment should also be considered. Portable instrumentation should have multiple probes for contamination and a range of gamma dose rate measurements from 10  $\mu$ R/hr to over 100 mrem/hr.

### **16. Appendix D. 4. Characterization Equipment**

Laboratory analysis should be mentioned as an acceptable method of characterization in lieu of detection equipment.

#### [Suggested change to TGD:](#)

Characterization equipment can be significantly more complex and expensive than detection equipment. Therefore, it is acceptable for facilities to merely have prompt access to characterization equipment (e.g., through a health physics consultant) rather than owning it. Onsite and third-party

laboratory analysis is another acceptable method of characterization. In this case, it must be explicitly stated in the RP Action Plan.

#### **17. Appendix E. Title**

Remove “Oil and Gas Well Development Operations” and just use the defined term Facility.

#### [Suggested change to TGD:](#)

APPENDIX E. GUIDELINES FOR RP ACTION PLANS FOR DETECTION AND HANDLING OF RADIOACTIVITY AT FACILITIES

#### **18. Appendix E. (1. C.)**

A minimum of one-day of training is generally more than should be required for many of the types of processing activities that occur at unconventional well sites; for example, if the only processing that is occurring involves drill cuttings at essentially NORM concentrations, a full day of radiation training should not be necessary.

#### [Suggested change to TGD:](#)

Each facility should designate an individual responsible for implementation of the RP Action Plan. This individual should have adequate authority to implement the Plan. If the individual(s) implementing the RP Action Plan is/are different from the individual(s) who prepared the RP Action Plan, the RP Action Plan should specify the minimum training in the fundamentals of radiation safety and detection to be required for the individual(s) responsible for implementing the RP Action Plan, at a level appropriate for the types of RAM being managed at the facility.

#### **19. Appendix E. (1. D.)**

Updating a RP Action Plan through a permit modification is not practical for General Permits (i.e., WMGR123 permits) that do not allow for minor and major modifications. Current regulations do not parse out, for general permits, the difference between something that might be considered a major modification vs. a minor modification like with individually permitted facilities, therefore a GP modification requires a substantial submittal document from the facility. Additionally, RP Action Plans prepared for O&G activities that do not have an associated solid waste permit do not require RP Action Plans to be submitted and/or approved.

#### [Suggested change to TGD:](#)

If a facility’s RP Action Plan requires submittal and approval by the Department revisions to that RP Action Plan should be provided to the Department for approval, per the solid waste regulations.

#### **20. Appendix E. (2. A.)**

If an element isn’t applicable or appropriate, a written explanation to that effect should not be necessary. In fact the next paragraph makes that point; that the most important thing is that the plan should be simple, etc., not contain unnecessary text explaining why non-applicable elements are not included.

[Suggested change to TGD:](#)

Certain RP Action Plan elements included in this guidance document may not be applicable or appropriate for a specific facility, operation or type of incident. In these cases, the person preparing the RP Action Plan should act accordingly.

**21. Appendix E. (2. B. O&G Vehicles)**

This section should be more consistent with language under Solid Waste Vehicles. Vehicles transporting fluids should not have detectable radiation above background. Further, for O&G activities the concern is solid waste leaving the facility not liquid waste entering the facility.

Chapter 78a.58(d) only applies the RP Action Plan requirements to “radioactive material produced by the treatment processes,” not all waste leaving the site.

[Suggested change to TGD:](#)

If a vehicle containing liquid waste (e.g., water tanker trucks) is suspected of containing TENORM it should be surveyed according to the procedure listed above for solid waste vehicles.

**22. Appendix E. (2. B. O&G Facilities Fixed Equipment and Tanks)**

This section is an overreach of the requirements for an oil and gas operator to "develop an action plan specifying the procedures for monitoring" for TENORM that is required by Chapter 78a.58(d). DEP would need pursue the rulemaking process to prescribe monthly or even quarterly surveying. Further Oil & Gas Waste Processing that occurs at a well site is temporary, tanks and pipelines associated with the processing activities are not “fixed.” We suggest that this section be deleted.

**23. Appendix E. (2. B.)**

“An example of a typical ‘decision tree’ for determining appropriate steps when radioactivity is detected is in Appendix I.” We suggest moving this reference statement above Solid Waste Vehicles as it relates to both Solid Waste Vehicles and O&G Vehicles.

**24. Appendix E. (2. D.)**

Laboratory analysis should be mentioned as an acceptable method of characterization in lieu of detection equipment.

[Suggested change to TGD:](#)

Immediate disposal or processing of waste with short-lived RAM from patients or individual consumer products containing exempt RAM (i.e., smoke detectors) is typical at solid waste facilities. The RP Action Plan must have procedures for characterizing the type of radioactive material present in the waste. It is acceptable for facilities to merely have prompt access to characterization equipment (e.g., through a health physics consultant) rather than owning it. Onsite and third-party laboratory analysis is another acceptable method of characterization. In this case, it must be explicitly stated in the RP Action Plan.

## 25. Appendix E. (2. H. 2&4)

See previous comments regarding “rejected waste loads”.

## 26. Appendix E. (2. I.)

This section should not be specific for O&G, other industries may generate waste with elevated TENORM and they should be held to same recommendations.

The need for, or usefulness of, the table in Appendix H in this document is unclear and will likely lead to confusion and/or uncertainty as to what its purpose is in this document, if not further explained. For example, the first two lines in that table provide two different concentrations for total Radium as a Volumetric Cleanup Criteria (3 pCi/g and 5 pCi/g) based on different reference organizations, with no further explanations of which, if either, is relevant in PA under various scenarios, nor for purposes of this document. This is the only place in this document where that Appendix is referenced, with no explanation as to specifically why it is being referenced or how the information is to be used, so we recommend that further explanation for including Appendix H be provided, or **that it be deleted**.

### Suggested change to TGD:

At landfill sites and facilities that are handling and processing liquids containing elevated levels of radium, the Action Plan should include procedures for monitoring and mitigation of spills or leaks of wastewater. Similarly, liquid storage tanks once drained and taken out of service should be surveyed for radiological contamination. Survey records should be maintained for five years. Landfills that have accepted large volumes of TENORM waste should have long-term environmental monitoring programs in place to monitor leachate and detection of radiological groundwater contamination. Appendix H provides a table of Applicable or Relevant and Appropriate Requirements (ARARs).

## 27. Radiation Protection Action (and Monitoring) Plan Checklist (Non-landfill Plan Elements)

Comments on Form X:

- This Form is not required by 78a.58(d), as implied by the first sentence on the form that says it “must be .... completed” if it is intended to be used for 78a.58(d) operations.
- If intended for 78a.58(d) operations, the Form should be updated to include a reference to 78a.58 in the General References section and a check box in Section B for unconventional well site processing operations, per 78a.58(d).
- It’s not clear why the Form includes a check box in Section B for O&G Wastewater Storage Impoundments since those are not required by 78a.58 to have a RP Action Plan (unless perhaps they’re associated with onsite processing operations).
- Section C of the form says it’s for waste “entering” the permitted facility, which isn’t relevant to 78a.58(d) facilities since the RP Action Plans required for those facilities are for the radioactive material produced by the treatment processes.
- If this form is intended for 78a.58(d) facilities, then further detailed review of the form specific to those facilities and the regulatory language of 78a.58(d) should be performed separate from

this guidance document review.

**28. Radiation Protection Action (and Monitoring) Plan Checklist (Non-landfill Plan Elements)**

This comment implies that if you send known TENORM with an approved profile to a landfill that gets rejected due to the facilities monthly TENORM allotment being completely utilized upon arrival of the waste load, the waste load would need a DOT Special Permit. This would not be necessary as you have characterization data and a DEP approved profile that evidences the load is DOT compliant (less than 270pCi/g). This known properly characterized load that is less than 270pCi/g does not require a special permit and can be transported to another landfill or be return to the generating facility as Residual Waste. It is not possible to schedule loads into a landfill in advance to guarantee enough TENORM tons are available.

For example – Generator A contacts the landfill and schedules a load of known TENORM into landfill on Wednesday evening. Generator A sends load first thing Thursday morning, upon arrival at landfill Generator A is informed that they no longer have available TENORM tons. The TENORM tons that were available were no longer available due to Generator B sending a load of TENORM to landfill that arrived 30-minutes prior and utilized the TENORM tons for that month. Therefore, this should be removed from the checklist.

**29. Appendix F. 2.**

Why is O&G the only example provided here? Other industrial examples should be included here as well to avoid misinterpretations that O&G is the only example worth highlighting.

**30. Appendix G. 9.**

See previous comment above at the Table in Sec. II.C. questioning why this is 25 mrem/yr rather than 100 mrem/yr.

**31. Appendix H.**

The “Potentially Apply:” column should be removed or revised to not be industry specific. None of the ARARs in this table are specific to the O&G industry. This column targets the oil and gas industry when recommendations/standards in the table apply to all industries. This Guidance Document supports all industries and therefore it should not target O&G in this table.

Example –

Volumetric Liquids, e.g., Groundwater	5 pCi/L Total Radium (Ra-226 + Ra-228) in drinking water	US EPA Drinking Water Standards	Effluent Water from Well Pads
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Effluent Water from Well Pads should never be compared to an EPA drinking water standard. Stormwater managed under the auspices of a well pads ESCGP permit is not required to meet a drinking water standard and produced water managed as a residual waste is not comparable to drinking water. What is “Effluent Water”?

Oil and gas operations are required to follow cleanup standards found in Chapter 78a.66 and Act 2 of the Environmental Cleanup Program. To our knowledge PA DEP has not promulgated the federal

standards within the table in Appendix H and it is unclear if they apply to any Pennsylvania regulatory programs. Cabot questions the Department's statutory authority for these numbers. We recommend either removing Appendix H or extensive revisions that would provide another title and reason for its inclusion.

[Suggested change to TGD:](#)

Replace "Well Pads" with "facilities managing RAM"

**32. Appendix I.**

This table does not account for properly characterized TENORM waste that is disposed in another State. It also does not account for TENORM that triggers a Level 1 Alarm that is disposed at a PA landfill that does not require "blanket authorization".

**Closing**

PIOGA thanks the Department for its attempt to bring clarity on how to write a Radiation Protection Plan, but respectfully requests the above suggested language changes be reviewed closely. We look forward to working with the Department on this document as it goes through the review process.

Sincerely,



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Daniel J. Weaver  
President and Executive Director  
PIOGA