METRO WASTEWATER RECLAMATION DISTRICT

Catherine R. Gerali, District Manager

December 11, 2013

Via Email and U.S. Mail:
cdphe_tenormpolicyrevision@state.co.us
and steve.tarlton@state.co.us

Mr. Steve Tarlton, Radiation Program Manager
Colorado Department of Public Health and Environment
4300 Cherry Creek Drive South
Denver, CO 80246

Re: Public Comments on Draft TENORM Guidance

Dear Mr. Tarlton:

This letter provides comments, on behalf of Metro Wastewater Reclamation District, to the proposed revisions to the February 2007 "Interim Policy and Guidance Pending Rulemaking for Control and Disposition of Technologically Enhanced Naturally Occurring Radioactive Material (TENORM), Rev. 2.1" (the "Guidance"), as summarized by the "TENORM Policy and Guidance, Revision 2013, draft overview of 10/1/13" ("Draft Overview"). We also appreciate the opportunity to have participated in the October 8, 2013 stakeholder meeting.

The Metro Wastewater Reclamation District ("Metro District" or "District") is the wastewater treatment authority for much of the metro Denver area, including Arvada, Aurora, Denver, Edgewater, Lakewood, Mountain View, Thornton, Wheat Ridge, and parts of Englewood and Westminster, as well as numerous water and sanitation districts. The Metro District is committed to protecting the environment and providing for the community's future needs. The District serves approximately 1.7 million people, treating about 130 million gallons of wastewater per day. Our mission is to provide wastewater transmission and treatment services to Metro District ratepayers in an efficient, cost-effective manner, while continuing to meet all statutory and regulatory requirements. The District land-applies most of its biosolids, sends some to a private composter, and maintains contracts with multiple landfills for emergency operations when beneficial use outlets are unavailable. The Metro District does not generate nor receive TENORM with concentrations of regulatory concern. Our comments to the Guidance and the Draft Overview are as follows:

1. <u>The Guidance is an Unlawful Regulation</u>

The Guidance uses words like "shall," "must," "applicable," and "exempt" throughout the document. This means that the Guidance is intended to be binding. Guidance should be non-binding, otherwise it is invalid and unlawful.

The Guidance is tantamount to State "rule making" without following the requisite State administrative rulemaking procedures set forth in C.R.S. § 24-4-103. In general, guidance

To allow and regulate the land application of sewage sludge, the U.S. Environmental Protection Agency ("EPA") promulgated Standards for the Use or Disposal of Sewage Sludge in the Code of Federal Regulations, Title 40, Part 503, of the Clean Water Act in 1993 ("Reg 503"). The regulations were the result of more than two decades of research, analysis, and risk assessment by EPA, based in part on a long history of land application for beneficial reuse that predated the regulations. Far from being a regulation to "recharacterize sludge", Reg 503 simply brought national standards and practices into the regulatory program to ensure that sludge—or biosolids—application would meet national criteria for environmental and public health protection. There were no identified situations in the U.S. where radioactive materials in sewage sludge (biosolids) have posed a threat to the health and safety of workers in the POTW or to the general public.

In addition, from 1998 to 2000, through the Interagency Steering Committee on Radiation Standards (ISCORS), the U.S. Nuclear Regulatory Commission (NRC) and EPA conducted a joint survey to collect information on radioactivity in sewage sludge (biosolids) from POTWs. Questionnaires were sent to 631 POTWs requesting information regarding wastewater sources, wastewater and sludge treatment processes, and sewage sludge disposal practices. From the 420 returned questionnaires, NRC and EPA selected 313 POTWs to be sampled. The results of the analyses revealed that samples primarily contained NORM such as radium, and that the levels were generally comparable to what is found in other media (*e.g.*, soil and fertilizer). The nearly ten-year ISCORS effort found the levels of radioactive materials in sewage sludge from most POTWs were generally low and the associated radiation exposure to workers and the general public very low, and not likely to be of concern, including radiation exposure to the general public through the use of sludge as a soil amendment for growing food crops.

Therefore, a wastewater treatment facility that does <u>not</u> accept wastes from the oil and gas industry or backwash or residuals from water treatment facilities, should not be required to expend considerable financial resources and personnel time to prove that they do not have a TENORM problem. Data from only one facility should not trigger regulatory requirements for an entire industry, particularly where data from that facility is not representative of the entire industry. The Guidance should be tailored to address the issues of concern, and therefore only apply to wastewater treatment facilities that accept oil and gas waste or backwash from water treatment facilities. These facilities accept TENORM wastes, and thereby have a potential problem and should be required to collect data to evaluate TENORM issues. This is especially appropriate due to recent drinking water regulations requiring water treatment facilities to treat for and remove radionuclides resulting in water now reaching waste water treatment facilities having fewer radionuclides than before.

For example, the Metro District's biosolids do not have radionuclides in concentrations of concern because it does <u>not</u> accept wastes from the oil and gas industry nor backwash or residuals from water treatment facilities. Radium 226+228 concentrations are less than 3 pCi/g, and usually range between 1-2 pCi/g, and uranium is less than 50 ppm. These results include background concentrations, so the amount of TENORM is actually less than the numbers reported. The levels of radioactivity in the District's biosolids are comparable to soils in this area. Moreover, after the above samples were taken, new drinking water treatment regulations were implemented that require the removal of radionuclides to meet the new uranium drinking water standard. This means that there is less uranium and radium in the influent coming into Metro District's facility today, so the results now would reasonably be expected to be lower than those noted above.

The Guidance, however, has many inconsistencies with the SSRCR. Listed below are some of the inconsistencies.

- The SSRCR regulations exempt from radiation control regulation TENORM with a concentration of Ra-226 and Ra-228 below a combined 5 pCi/g. SSRCR, Sec. N.4(a) (2004). Tthe Guidance identifies 3 pCi/g as the exemption threshold for Ra-226+228. Guidance at § 5.1. Moreover, the Guidance states that TENORM with concentrations of Ra226+228 less than 3 pCi/g may be disposed of in any landfill, but this is a disposal criterion into any landfill with protections to the public, not as a free release criterion like the SSRCR regulations.

- The SSRCR regulations exempt TENORM from radiation control regulation when the total effective dose equivalent (TEDE) is less than 100 mrem/yr. Sec. N.4(f). The proposed policy statement says it is the "policy" of CDPHE to limit potential annual exposures to 25 mrem/yr. Draft Overview at 1. Throughout the Guidance, the Guidance does not adhere to the SSRCR's exemption of 100 mrem/yr and lowers that threshold to 25 mrem/yr, and even 1 mrem/yr in some cases. *See e.g.*, Guidance § 4.4 (TENORM with doses above 25 mrem/yr require a radioactive materials license); Draft Overview at 7 (dose assessments will use 25 mrem/yr and as low as reasonably achievable (ALARA) as benchmarks). The 25 mrem/yr unrestricted use criteria in Colorado's regulations (RH 4.61.2) is for licensees, not unlicensed activities that involve TENORM. The SSRCR regulations exclude TENORM from its 25 mrem/yr license decommissioning criteria. Sec. N.7(b)(i). SSRCR applies the 5 pCi/g concentration above background for Ra-226+228 for soil layers of 15 cm for release criteria. Sec. N.7(b)(ii). Therefore, the CDPHE policy of 25 mrem/yr for TENORM exposures, and requiring licenses for such exposures, is inconsistent with the SSRCR regulations. The Guidance should change its policy for annual exposures to 100 mrem/yr for TENORM. There is no regulatory basis to require a radioactive materials license for TENORM below 100 mrem/yr.

- The SSRCR regulations state that doses from inhalation of indoor radon and its short half-life (less than 1 hour) progeny shall not be included in calculations of the TEDE, except when the dose is due to effluent releases from licensed operations involving the handling or processing of TENORM. Sec. N.5(c). The Guidance, however, relies on radon inhalation to make policy from non-licensed facilities. The CDPHE RESRAD dose slides for the December 11, 2013 stakeholder meeting show that the only significant risk from biosloids land application is from indoor radon, which should be excluded.

- With respect to water treatment residuals or waste water treatment biosolids, the SSRCR exempts materials with a concentration of Ra226+228 less than 10 pCi/g for farmland application. Sec. N.4(g). By contrast, the Guidance states that residuals with concentrations up to 9 pCi/g may be disposed of in a municipal solid waste landfill only if the landfill has extra controls. It does not make sense to allow direct farmland application on land without any controls of biosolids up to 10 pCi/g under the SSRCR and yet limit landfill disposal to 9 pCi/g at an approved landfill that has controls. If unrestricted use on farmland without protections is allowed for TENORM up to 10 pCi/g, then disposal in a landfill with special protections should be greater than 10 pCi/g.

- The Guidance references the SSRCR criteria of land application of water treatment residuals less than 10 pCi/g of Ra226+228, but states that CDPHE will consider this land

treatment facilities to identify background concentration. As a result, generators of TENORM will likely sample and analyze the resulting materials, such as biosolids, and then compare the number from the lab to the numbers in the Guidance without subtracting the background concentration. This would result in the unnecessary, over-regulation of materials in some cases. Metro District supports the development of methods for wastewater treatment facilities to first determine background concentrations that will then be subtracted from the concentration found in the biosolids concentration to determine the appropriate management method of the TENORM. Of course, if the concentrations in the biosolids are below the TENORM thresholds for unrestricted use, then there is no need to determine background. Determining background is appropriate only when the biosolids are above the relevant threshold. In any event, the Guidance should include a section that discusses and alerts generators about the issue and identifies methods to determine background. The Guidance should also include a section to deal with analytical issues, such as proper methods, count times, counting errors, detection limits, etc.

7. The Disposal Tiering System Should be Modified

The Metro District also disposes of some of its biosolids in landfills from time to time. The landfill disposal tiering system used by the Guidance has no scientific basis. For example, the Guidance states that TENORM may be "released from radiological control if the upper 90% confidence interval of combined Ra-226 and Ra-228 is less than 3 pCi/g and natural uranium is less than 30 pCi/g." Guidance, § 4.4.1. According to the Guidance, TENORM meeting this criterion may be disposed of at any solid waste landfill.

This criterion of 3 pCI/g of Ra-226+228 and 30 pCi/g of U should be changed. The criterion is derived from the Health Physics Society's "Surface and Volume Radioactivity Standards For Clearance" published by the American National Standards Institute, Inc. (ANSI) in 1999. ANSI/HPS N13.12-1999. The criterion is a "screening" standard. A "screening" standard is different than a "clearance" standard. A screening standard is a level set well below a clearance standard so that a material may be screened relatively quickly and inexpensively and excluded from further analysis that would be more costly and more time-consuming. The clearance standard is higher (in concentration) than the screening standard; thus, a material may have a higher concentration than the screening standard, but upon further analysis it may be less than the clearance standard and thus allowed to be released from a radioactive materials license.

The ANSI standard of 3 pCi/g above background is not a screening standard for disposal at solid waste landfills. The ANSI standard is a "clearance" standard for unrestricted use. *See Table 1 of ANSI N13.12-1999, Surface and Volume Radioactivity Standards For Clearance.* "Clearance" means the removal of materials "from any further control of any kind," according to the ANSI standard. In other words, if the TENORM material is less than 3 pCi/g for the group that includes Ra-226, according to ANSI it may be left wherever it is: on the surface, in a hole, or land applied to any property. According to ANSI, the risk-based reason for this conclusion is that 3 pCi/g is the equivalent of only 1 mrem/yr. Colorado law says that licensed material less than 25 mrem/yr may be released from radiological control. Therefore, the Guidance would lower the standard for unlicensed TENORM material to 1 mrem/yr standard for unlicensed TENORM material. There is no regulatory or scientific basis to set a 1 mrem/yr standard for landfill disposal.

Furthermore, it is highly significant that the Nuclear Regulatory Commission (NRC) (June 1, 2005) rejected adoption of the ANSI standard of 1 mrem/yr as a clearance rule. In rejecting the proposed rule, NRC Chairman Diaz noted that the "National Academy of Sciences has

The Draft Overview (P. 8) states that CDPHE will require licenses if certain concentrations of radionuclides are exceeded. There is no technical or regulatory support for these numeric thresholds. This "requirement" is tantamount to new regulation. The numeric thresholds should be established by regulation, after a public hearing that contains scientific evidence supporting the numeric thresholds and legal authority for those thresholds. The numeric thresholds are arbitrary and unauthorized. They should be removed from the Guidance.

CONCLUSION

The Metro District appreciates the opportunity to comment on the proposed revisions to the Guidance and looks forward to further opportunity to sit down with all stakeholders. Thank you for your consideration.

Sincerely,

Theresa Pfeifer

Theresa Pfeifer
Regulatory Compliance Officer

Enclosures

TAP:wlh
cc: Robert Thomas, Metro District
Maki Iatridis, Berg Hill

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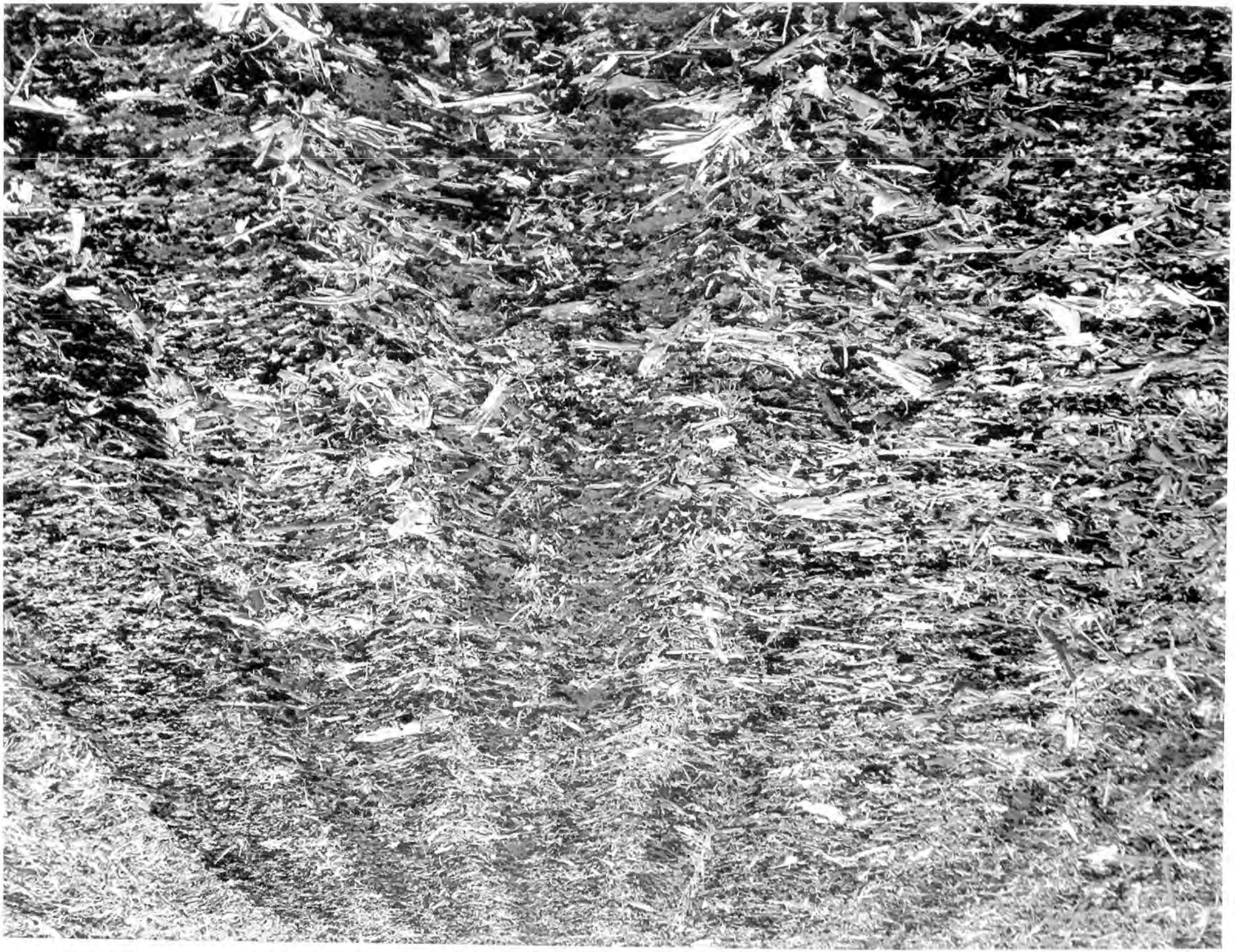

How are Biosolids Transported/Applied?

The Metro District's biosolids are transported to each site in commercial trucks. The biosolids are transferred from the truck to the Applicator, a modified side-discharge manure spreader. The amount of biosolids applied to each site (agronomic loading rate) is calculated using the following factors:

- ⇨ Crop to be grown
- ⇨ Yield goal for that crop
- ⇨ Nutrient requirement for that crop
- ⇨ Nutrients presently available in the soil
- ⇨ Nutrients available in the biosolids

With these factors an agronomic loading rate is calculated and the amount of biosolids to be applied to each site is then determined.

How much does Land Application Cost?

The Metro District charges a fee of $8.00 per acre for 75 lb of Nitrogen per acre or less and $12 per acre for over 75 lb of nitrogen per acre (Plus a calculated fuel surcharge). This includes soil sampling, transportation, field application, and if requested, incorporation of the biosolids into the soil.

Are there any Rules/Restrictions I need to be aware of*?

Biosolids are regulated by the Environmental Protection Agency through 40 CFR Part 503 and by the Colorado Department of Public Health & Environment, Biosolids Regulation No. 64. Under these regulations there are a few portions that pertain to Farmer/Rancher responsibility:

- ⇨ Food crops, feed-crops, and non-food crops shall not be harvested 30 days after application of biosolids.
- ⇨ Animals shall not be allowed to graze on the land for 30 days after application of biosolids.
- ⇨ Public access shall be restricted for 1 year after the application of biosolids.

*Certain County or Local Agencies may have additional rules/restrictions that apply.

If I am interested in receiving Biosolids, will I receive them this growing season?

The permit process takes about 4-6 months, and all proper permits must be issued prior to land application. The earlier you contact us, the earlier we can start planning for when you can have biosolids applied to your farm or ranch.

Who do I contact to find out more information about signing up?

Please contact a representative in the Metro District's Resource Recovery & Reuse Department at (800) 237-6603 for more information and to get your biosolids program started today!

METRO WASTEWATER RECLAMATION DISTRICT

6450 York Street Denver, Colorado 80229
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TENORM- Comments after Kick-Off Meeting

Kathryne Marko <Kathryne.Marko@ci.longmont.co.us> Mon, Oct 21, 2013 at 1:26 PM
To: "cdphe_tenormpolicyrevision@state.co.us" <cdphe_tenormpolicyrevision@state.co.us>

Thank you for coordinating such a large stakeholder group, it's not an easy task and I appreciate you including all of the appropriate groups to get our comments before moving forward. From the first meeting, I understand that you want to make this guidance general so it will cover many types of scenarios. Although on the surface this seems to makes sense, when we start getting into the details it may not be needed. I've tried to outline my concerns in these comments, but if you want to have a more detailed conversation about them, feel free to give me a call.

At the kick-off meeting we had a lot of discussion about defining the problem and goals. What I understood was the radiation program has had to deal with many case-by-case issues and in order to deal with the majority of scenarios a media specific format is preferred. However, in the meeting, it seemed that all the examples given for showing a problem was the oil and gas industry. In order for us to help with this process we need understand the types of case-by-case scenarios that are triggering a revision to the guidance. If the issue is the oil and gas industry, it seems that a whole revision is not needed; rather we just need to figure out the best way to add the oil and gas industry to the guidance document. It would be a great help if you could summarize the past case-by-case issues to show what the problem is. Then we would be better suited to help with the solution.

It appears that by changing to media specific guidance there would be a lot of testing to show that there's not an issue. There would need to be a concerted effort focused on exemptions. For example, a wastewater treatment plant that does not accept waste of concern should not be included in the requirements and should not have to test to prove there is not an issue. Also, it would be helpful if you could clarify if there is a need to change the water treatment plant requirements. If the requirements don't need to change, the drinking water industry would put in effort on the guidance revisions when there isn't any change in their requirements.

I just want to make sure I understand correctly. There will not be a new separate regulation for TENORM but there is anticipated to be new requirements added under existing regulations. Essentially this is new regulation but it's just being implemented in an existing regulatory framework.

Moving forward, we need to start with everyone understanding the problem. Then we can discuss the different options we have to address the problem. Thanks again for soliciting comments and let me know if you'd like to discuss anything further. I look forward to participating in this stakeholder process.

Thanks.

Kathryne Marko

Public Works and Natural Resources

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AURORA WATER

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December 10, 2013

Colorado Department of Public Health and Environment
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Denver, Colorado 80246-1530

RE: TENORM Policy Revisions

Under the current TENORM Policy, if water treatment facilities residuals exceed 40 pCi/g gross alpha a site and waste proposal must be submitted to CDPHE for review and approval prior to disposal. The City of Auroras most recent experience of the process took approximately 4 months.

During the Griswold Facilities scheduled annual removal of backwash residuals analyses revealed that the material was identified as Tier II. February 23, 2012 The City of Aurora submitted a waste specific proposal for CDPHE review in February. March 19, 2012 the division notified the city that the levels were in fact Tier II and appropriate for disposal to a suggested landfill; however a formal request would have to be made through the permitting unit of the Solid Waste Materials Management Program prior to disposal. March 28, 2012 Approval from the CDPHE Radiation Management Unit and Solid Waste Unit however, "The selected facility must submit a letter to CDHPE confirming adherence to and implementation of the enhanced facility controls for the disposal of materials per the *Interim Policy and Guidance Pending Rulemaking for Control and Disposition of Technologically-Enhanced Naturally Occurring Radioactive Materials in Colorado (Policy) dated February 2007*." May 1, 2012 a waiver for a one-time disposal of the subject material was granted. Going forward, if a similar disposal(s) at the same facility are planned the Division requests that the waste characterization plan be amended and submitted to the Division for review and approval.

Ultimately the facility receiving the waste has the final say as to how much material they are willing to accept. Having a Water Treatment Facility submit data classifying the waste stream to the Division only to then have the Landfill submit similar data for approval on receiving the waste seems a bit redundant. Additionally, having a single contact point may assist in streaming the existing process and clarifying some general questions.

Please feel free to contact me if you have any questions regarding these comments.

Sincerely,

Bobby Ansatasov
Water Quality Specialist II

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STATE OF
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Comments on rule making

Mike Scharp <scharpm@aol.com> Fri, Dec 13, 2013 at 9:35 AM
To: cdphe_tenormpolicyrevision@state.co.us, scharpm@aol.com

I have a few comments regarding the policy and how it applies to biosolids.

1 - Biosolids should be allowed a matrix that if they do not accept water plant residuals from plants that treat well water then they are exempt.

2 - The sampling techniques and procedures need to updated and easily accessible so you get the data you need that is correct and useful.

3 - The error in testing needs to be discussed. A report will say 10.1 pCi/gm with a +/- 4 and with the limit of 10 then you are Tier II. That is not right. With that much error there needs to be a way to allow for that to affect the practice.

4 - It appears the risk assessment for biosolids is not correct in many aspects. I am willing to meet separately with a few other biosolids managers and the state regulator Tim Larson and work through what biosolids application actually looks like.

5 - It appears from the models presented that concentration within a home is what drives radon and the whole model but does not every home have to do radon testing before you can buy it and if it is present a simple vent system is installed? Would that not alleviate the issue and make most of this go away and since this is true on any new home that pretty much solves the problem.

6 - I also have a concern with trying to manage exposure to 25 mrem. I would like the lawyers to figure this out because it looks like we are managing to such a low number that it is really background.

7 - Maybe the state should tell water treatment plants not to discharge water plant residuals to the WWTP if they have TENORM issues??? That would solve all biosolids issues.

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