

Comment	Response
<p>establish an annual exposure threshold of 100 millirem/year above background instead of the proposed 25 millirem/year dose</p>	<p>The department has determined that selecting 25 mrem annually as the policy standard is consistent with the current regulatory structure that applies to licensed radioactive materials and provides protection to public health that is equivalent to the protection provided for any specifically regulated facility containing radioactive materials once they are released for unrestricted use.</p>
<p>clarify that the proposed annual exposure rate is a rate above background</p>	<p>As stated in the policy statement the standard of 25 mrem per year is that dose which is in addition to any background dose. Based on that premise, when performing risk or dose assessments, background concentrations may be subtracted from the radionuclide concentrations that are contained within the materials that are subject to the assessment.</p>
<p>consideration of residential radon dosage in decision-making for disposition of TENORM-related wastes, including oil and gas production wastes is not a universal consideration.</p>	<p>Because TENORM and UQ quite frequently involve radium-226, the department has determined that risk from radon should be included in assessments regarding the handling and disposition of these materials.</p> <p>The department has chosen to include the potential dose from radon in assessments but to allow for the dose from radon to be subtracted for the purposes of meeting the 25 mrem standard as long as other measures are taken to ensure that the hazards from radon are mitigated in the future. The department considers it appropriate to use institutional controls, such as environmental covenants on property, that would, for any future buildings, require radon resistant construction, post construction assessment and testing, and radon mitigation in order to meet any federal, local, or Colorado standards or guidance on indoor radon concentrations.</p>
<p>establish the following limits as used in other states for management of TENORM solid wastes without restriction:</p> <ul style="list-style-type: none"> <li>• 5 pCi/g above background for Combined Ra-226/228. .</li> <li>• 150 pCi/g above background for all other radioactive constituents.</li> </ul>	<p>The department has determined values we consider to be protective and reasonable that are different from those proposed in the comment. If there is additional data or technical analysis available to support the different values, it should be submitted to the department.</p>
<p>The EPA’s recommendation of 15 mrem/yr should be incorporated into the Department’s TENORM guidance because it is more protective of public health and the environment.</p>	<p>See comment response above</p>
<p>the RESRAD mrem Dose Exposure is not an accurate representation of biosolids land</p>	<p>Additional data has been submitted regarding biosolids land application that will be addressed in the development of guidance specific to that practice.</p>

application	
risk assessments that realistically model given scenarios need to be developed to determine new criteria for TENORM	Specific scenarios will be addressed in the development of guidance specific to that practice.
More disposal sites (landfills) must be identified.	We agree; Completion of the policy and guidance should allow for easier decisions regarding TENORM management and disposal.
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?	No. If radon testing is performed, the results should be provided to the prospective purchaser. Colorado has no statewide building code, therefore requirements for testing or radon-resistant new construction are determined by local governments.
Differentiate between incidental dilution and purposeful dilution; both may be allowable	In general, normal operations that potentially dilute or concentrate materials as a part of the routine processes would not be considered inappropriate nor contrary to policy, however, any acceptable concentrations or levels established within the policy should not be construed as provisions for the disposal or disposition of higher-activity materials by mixing and dilution with clean material. This would be considered radioactive waste dilution and is inconsistent with federal and state radioactive waste handling policy and regulation. There may exist options for blending higher concentration materials with lower concentrations materials under certain controlled conditions, if approved by the Department.
summarize the past case-by-case issues to show what the problem is	The department is charged with protecting the public health of Colorado from radiation. Activities such as drinking and waste water treatment, oil and gas exploration and production, metal mining and refining, and various others remove naturally occurring materials as part of their process and the resultant waste stream or residual material needs to be managed. Additionally, over time the understanding of and concern regarding the potential hazards associated with these materials increases as well.
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.	Those terms have been removed as appropriate. The existing policy and the proposed revisions are not regulation or rule.
CDPHE may not regulate the disposal of NORM unless federal Environmental Protection Agency regulations are first promulgated. § 25-11-104(1)(b), C.R.S. Because there are no EPA	The existing policy and the proposed revisions are not regulation or rule. The department does not agree with this logic.

<p>regulations in existence at this time, CDPHE may not adopt any rules concerning the disposal of NORM. The Guidance is at odds with this statutory prohibition.</p>	
<p>any NORM or TENORM regulations promulgated by CDPHE “shall be consistent with the model regulations proposed” in the “Suggested State Regulations for Control of Radiation” (“SSRCR”), unless the Board of Health concludes on the basis of detailed findings that a substantial deviation is warranted. C.R.S. § 25-11-104(2).</p>	<p>The policy is not regulation. The contents of this Colorado policy are not, and are not intended to be, a regulatory scheme based on the SSRCR Part N, and as a result there are some variations between the policy’s approach and that of Part N.</p> <p>Specifically, there are some different approaches to the thresholds for licensing, certain exemptions, doses to the public, disposal criteria, and beneficial reuse, among others. It is difficult to make a direct comparison of the policy to Part N because one is a regulatory scheme that depends on radioactive materials licensing and oversight by a radiation control agency and the other is a policy that would allow for flexibility in licensing and for materials to be regulated by their current regulatory agencies.</p> <p>The Part N SSRCR is currently open for revision by CRCPD and it appears that there could be significant changes made to that document as a result of the same issues that prompted the revision of this policy and guidance. Early discussions on Part N revisions and work done by another CRCPD working group investigating current issues and policies regarding TENORM indicate that Colorado is working toward a policy that would be consistent with their approach to TENORM regulation.</p>
<p>There is no regulatory basis to require radioactive materials licenses for TENORM. It is inconsistent to require a radioactive materials license for that TENORM if it can be disposed of in a landfill not licensed for radioactive materials.</p>	<p>The current policy and the proposed revisions do not anticipate licensing of most TENORM. Licensing may be required where public health is threatened.</p>
<p>TENORM waste should be regulated as hazardous and radioactive waste – which is mixed waste.</p>	<p>TENORM is not considered “radioactive waste” and disposal is regulated as solid waste. If it is radioactive such that it becomes a “radioactive waste” subject to licensing, it is exempt from solid waste regulation.</p>
<p>it is inappropriate to include Rule 609 in reference to “Regulations that impact TENORM” (page 4) and in Appendix A under COGCC on page 12-13.</p>	<p>Has been removed</p>

<p>Guidance should promote removing contamination from abandoned uranium mining sites., and regulations should require it.</p>	<p>The policy can be used to inform agencies or others remediating or closing abandoned uranium mine sites. It is not regulation.</p>
<p>such a complicated issue with so many aspects not addressed in the current guidance requires more public discourse, and a more comprehensive analysis of environmental impact.</p>	<p>The policy will continue to be discussed and additional meetings will look at guidance for specific practices.</p>
<p>The Guidance references 40 pCi/g gross alpha as a regulatory criteria for land application ( 4.3.3), but that criteria was removed from the biosolids regulation in March 2003. The Guidance needs to be updated to take into account the changes to the biosolids regulations and the fact there were no monitoring requirements associated with this criteria in Regulation 64 because previous monitoring had indicated the likelihood of biosolids exceeding the criteria to be minimal. This Guidance should not be more restrictive than the regulation.</p>	<p>Unlike the 2003 situation, TENORM has since been found in Colorado biosolids. As part of this policy revision process, wastewater facilities have been encouraged to demonstrate that their biosolids do not contain TENORM.</p>
<p>The Department’s guidance should identify ways that radioactivity at mine sites can be addressed within current statutes and permitting authority.</p>	<p>According to the DNR Division of Mining, Reclamation and Safety (DRMS), their regulation extends to mines permitted since their regulations were passed in 1977. Mines abandoned prior to that time fall under the responsibility of the landowner. In many cases, the landowner is a federal agency and some efforts have been extended to address problem mines through various mechanisms. In addition, DRMS has worked with companies opening mines adjacent or related to legacy mines to have reclamation of those legacy mines addressed. The department has applied the current policy to the management of mine waste on a case by case basis.</p>
<p>EPA guidance establishes an action level of 5 picocuries per gram above background for the presence of radium in soil at decommissioning uranium mills. The Department’s new guidance should provide similar action levels for the DRMS to carry out under its existing authorities to better ensure protection of public health and</p>	<p>DRMS has the responsibility for establishing standards at mines.</p>

<p>environment. Because the 5 pC/g standard is set for uranium processing sites, where higher radioactive levels at decommissioned sites are not as easily mitigated as they are at mining sites, a lower soil standard for radium should be developed for mines, regardless of commodity.</p>	
<p>Disposal and handling of fly ash and bottom ash from fossil fuel combustion should be regulated by the TENORM guidelines if radioactive</p>	<p>The policy is not regulation. The Radiation Control Act, Section 2.7 states: "Naturally occurring radioactive material" means any nuclide that is radioactive in its natural physical state and is not manufactured. "Naturally occurring radioactive material" does not include source material, special nuclear material, or by-products of fossil fuel combustion, including bottom ash, fly ash, and flue-gas emission by-products.</p>
<p>CDPHE cannot require treatment and then regulate the side effects of that treatment.</p>	<p>The policy is not regulation. This statement is not accurate.</p>
<p>No justification to broaden the coverage of TENORM guidance to all sources</p>	<p>The Radiation Control Act makes little distinction among radiation sources if they present a risk to public health. The current policy has been and is used to address a variety of TENORM sources.</p>
<p>CDPHE cannot issue regulation more stringent than federal requirements; there is no federal regulation; therefore the guidance is illegal.</p>	<p>The policy is not regulation. The Radiation Control Act is not dependent upon federal requirements for its authority. This statement is not accurate.</p>
<p>Policy should note and include Compact jurisdiction and requirements</p>	<p>The department does not have authority over the Compacts but the policy can include references to the requirements and some guidance on importing or exporting of TENORM materials</p>
<p>NORM is not regulated by the Guidance. Only TENORM is regulated</p>	<p>The policy is not regulation.</p>
<p>No Environmental Assessment, Analysis or Impact Statement has been completed by CDPHE to document all the sources and contaminants contained in TENORM. Nor has CDPHE justified why guidelines are adequate to manage the TENORM waste streams, rather than a full regulatory process.</p>	<p>A full regulatory process is prohibited by the Radiation Control Act. Various organizations and companies have assessed the impacts of TENORM in various waste streams. The study proposed by this comment is beyond the scope of the current policy revision.</p>
<p>Oil and gas and mining operations are notorious for releasing radioactivity into the ecological life-</p>	<p>It would be helpful to obtain the sources of this information. The Colorado Oil and Gas Conservation Commission regulates oil and gas operations. The DNR Division of</p>

cycle through all phases of actual (if not so technically defined) development and transport. Testing should be required.	Mining, Reclamation and Safety regulates mining.
Radioactive background values differ across the state of Colorado, and a thorough inventory of genuine values should be cataloged in order to determine alterations to such values through technological enhancements.	The proposed revisions to the policy provide some guidance on the development of site specific background values.
Coal ash in Colorado must be evaluated regarding the TENORM concentrations for both radioactivity and chemicals.	The current definition of NORM in the Radiation control act excludes byproducts of fossil fuels.
CDPHE should work with COGCC to quantify levels of radioactivity in O&G wastes and develop policies to ensure their proper disposal	CDPHE does interface with COGCC in regard to TENORM issues and hopes to continue that interaction as part of the development of the guidance on OIL and Gas Items that contain TENORM.
CDPHE must collect data regarding water treatment residual discharges to sanitary sewer. Their data says 35% of plants do so.	As the department receives more involvement from stakeholders during the development of guidance we hope to collect more accurate data on all activities regarding the disposition of TENORM containing materials.
Testing and analysis requirements should be clearly defined. Gross alpha is most cost effective.	The dose contribution to an individual is not directly relatable to a gross alpha determination. Many of the radioisotopes associated with TENORM and UQ materials do emit alpha particles when they decay. However, because of the differing geochemistry or elemental chemistry there exists differing potentials for the elements to be mobile in certain environments, and to be concentrated in others. Without knowing the specific isotopes present in a material it is unlikely that a reasonable assessment of potential dose could be performed.
The sampling techniques and procedures need to updated and easily accessible	The department plans on including a section of the guidance that specifically addresses sampling and analysis of materials for TENORM content.
The error in testing needs to be discussed	The department plans on including a section of the guidance that specifically addresses sampling and analysis of materials for TENORM content.
Case-by-Case approach to handling TENORM waste outlined in the guidance leaves some concern that necessary State resources may not be met through fee collection from licensees.	The policy and guidance should provide information to assist facilities in determining their data needs and management options, and minimize the time required by the department.