

Waste Acceptance Process and Notes:

- This guide is a summary of the Nevada Administrative Codes that pertain to disposal of exempt radioactive material as USEN.
- Data received from the generator concerning the exempt status of a waste stream will be reviewed by US Ecology and submitted to the Nevada Health Department for concurrence.

Table 1. Radioactive Material other than Source Material

NAC	Isotope and Material	Isotope, Activity, or Concentration
459.184(1)(a)	Radioactive materials other than Source Material	Isotopes and concentrations given in NAC 459.186
459.184(1)(b)	Naturally Occurring Radioactive Materials	≤ 5 pCi/g of Ra-226
See note	Naturally Occurring Radioactive Materials	≤ 818 pCi/g of K-40

NOTE: Concentration reflects natural abundance of K-40 and may not be enriched beyond its natural concentration.

Table 2. Exempt Source Material per NAC 459.182¹

Source Material	Maximum Concentration of Source Material	Equivalent Specific Activity
U-Nat in equilibrium with progeny	Less than 0.05% by weight	≤ 167 pCi/g U-238
Depleted Uranium	Less than 0.05% by weight	≤ 169 pCi/g U-238
Th-Nat in equilibrium with progeny	Less than 0.05% by weight	≤ 55 pCi/g Th-232
Mixture of Thorium and Uranium	Sum of ratios ≤ 1 ²	
Ore Containing Source Material	Ore must be unrefined and unprocessed	

1. Exempts “source material in any chemical mixture, compound, solution, or alloy in which the source material is by weight less than 0.05% of the mixture, compound, solution or alloy.”
2. Unity Equation:

$$\frac{\text{Conc. of U in sample}}{\text{Allowable conc. of U}} + \frac{\text{Conc. of Th in sample}}{\text{Allowable conc. of Th}} \leq 1$$

NOTE: USEN cannot receive and dispose of any material that has been characterized as Pb-210 waste. Material that has been characterized as unimportant quantities of source material, or radium-226 material may contain Pb-210 in equilibrium with the parent nuclide, in these cases the material will be considered for disposal.

Table 3. Exempted Products, Devices, and Items

NAC	Product, Device, or Item	Isotope, Activity, or Concentration
459.182(3)(a)(1-3)	Incandescent gas mantles, vacuum tubes, welding rods	Any quantity thorium
459.182(3)(a)(4)	Electric lamps for illumination	≤ 50 mg Thorium ea.
459.182(3)(a)(5)	Germicidal lamps, sunlamps, outdoor lamps, and industrial lamps	≤ 2 grams Thorium ea.
459.182(3)(a)(6)	Rare earth metals and compounds, mixtures, and products	≤ 0.25% by weight Thorium and/or Uranium
459.182(3)(a)(7)	Personnel neutron dosimeters	≤ 50 mg Thorium ea.
459.182(3)(b)(1)	Source material in glazed ceramic tableware mfg before 8/27/2013	≤ 20% by weight in glaze
459.182(3)(b)(2)	Glassware containing source material not including glass brick, pane glass, ceramic tile, or other glass or ceramic used in construction	≤ 2% by weight or ≤ 10% by weight if mfg before 8/27/2013
459.182(3)(b)(3)	Piezoelectric ceramic	≤ 2% by weight
459.182(3)(c)	Photographic film, negatives, and prints	Uranium or Thorium
459.182(3)(d)	Finished product or part fabricated of or containing tungsten-thorium or magnesium-thorium alloy. Cannot treat or process chemically, metallurgically, or physically	≤ 4% by weight Thorium
459.182(3)(e)	Depleted Uranium contained in counterweights installed in aircraft, rockets, projectiles, and missiles or stored or handled in connection with installation or removal of such.	Refer to specific rule
459.182(3)(f)	Natural or depleted Uranium used as shielding in shipping containers	Refer to specific rule
459.182(3)(g)	Thorium or uranium contained in finished optical lenses or mirrors	Refer to specific rule
459.182(3)(h)	Thorium contained in any finished aircraft engine part. Must be dispersed in nickel-thoria alloy in the form of finely divided thoria (thorium dioxide)	≤ 4% by weight Thorium
459.188	Various isotopes in quantities given in rule	Refer to specific rule
459.190(1-3)	Time pieces, lock illuminators, balances, auto shift quadrants, marine compasses, smoke detectors, thermostat dials & pointers, electron tubes, internal calibration sources for radiation measurement devices, static elimination devices, ion generating tubes, spark gap irradiators.	Refer to specific rule
459.192(1)	Self-luminous products containing tritium, Kr-85, Pm-147, or Ra-226	Per manufacturing license

US Ecology Nevada
Waste Acceptance Guidelines for Exempt RAM
Revised 4/23/2019



NAC	Product, Device, or Item	Isotope, Activity, or Concentration
459.192(3)	Articles containing Radium which were acquired before 2/28/1980	≤ 0.1 μCi Ra-226
459.192(4)	Gas and aerosol detectors for protection of life and property from fires and airborne hazards	Per manufacturing license
459.192(6)	Certain industrial devices designed and manufactured for the purpose for detecting, measuring, gauging or controlling thickness, density, level, interface location, radiation, leakage or qualitative or quantitative chemical composition, or for producing and ionized atmosphere	Per manufacturing license
459.192(8)	Capsules containing C-14 urea for "in vivo" diagnostic use in humans	≤ 1 μCi per capsule and was intended solely for in vivo diagnostic use in humans and not for research involving human subjects
459.217	Certain items containing Ra-226 manufactured before 7/6/2010*	<ul style="list-style-type: none"> – Antiquities originally intended for use by the general public such as radium emanator jars, revigators, radium water jars, radon generators, refrigerator cards, radium bath salts and healing pads – Intact timepieces containing > 1μCi, nonintact timepieces, and timepiece hands and dials no longer installed in timepieces – Luminous items installed in air, marine or land vehicles – All other luminous products, provided that no more than 100 items are used or stored at the same location at any one time – Small radium sources containing ≤ 1μCi Ra-226
459.3615(a)	Medium used for liquid scintillation counting or in vitro clinical or in vitro laboratory testing	≤ 0.05 μCi/g of H-3 or C-14

*Disposal of this waste is authorized under NAC 459.217(3)(d)