

**CABINET FOR HEALTH SERVICES**COMMONWEALTH OF KENTUCKY  
FRANKFORT 40621-0001

DEPARTMENT FOR PUBLIC HEALTH

November 19, 2001

Frederick C. Combs, Deputy Director  
Office of State and Tribal Programs  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555-0001

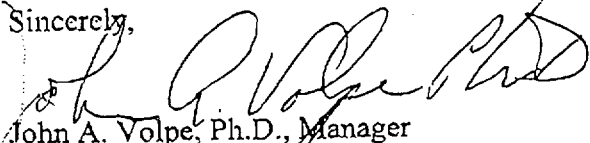
Dear Mr. Combs:

Enclosed is a copy of the proposed revisions to the Cabinet for Health Services' regulation 902 KAR 100:021, "Disposal of Radioactive Waste". The regulation will go before the Health Services Advisory Committee on January 4, 2002 and the proposed revisions will be submitted to the Legislative Research Commission (LRC) on January 15, 2002, if the internal review is finalized by the Cabinet for Health Services. The regulation would then be published in the Administrative Register on February 1, 2002 with a request for a hearing by February 16, 2002 and a hearing to be held, if requested, by the end of February 2002. We request NRC's comments prior to submittal to the LRC on January 15, 2002. The proposed regulations are identified by underlined/strikeout text and correspond to the following equivalent amendments to NRC's regulations (RATS ID # 1998-6, Transfer and Disposal Manifest in 10 CFR PART 20, Appendix G, "Requirements for Transfers of Low-Level Radioactive Waste Intended for Disposal at Licensed Land Disposal Facilities and Manifests").

We believe adoption of these revisions satisfies the compatibility and health and safety categories established in the Office of State and Tribal Programs (STP) Procedure SA-200.

If you have any questions, please feel free to contact me at (502) 564-3700 extension 3692 or via e-mail at [john.volpe@mail.state.ky.us](mailto:john.volpe@mail.state.ky.us).

Sincerely,



John A. Volpe, Ph.D., Manager  
Radiation Health and Toxic Agents Branch

Enclosure

c: Rice C. Leach, M.D., Commissioner, DPH  
John Zabko, USNRC, STP

1 CABINET FOR HEALTH SERVICES

2 DEPARTMENT FOR PUBLIC HEALTH

3 DIVISION OF PUBLIC HEALTH PROTECTION AND SAFETY

4 (Amendment)

5 902 KAR 100:021. Disposal of radioactive material.

6 RELATES TO: KRS 211.842 to 211.852, 211.990(4), 10 CFR 20.2001-.2007, Appendix

7 G [F] to 20.2001-.2401[, 49 CFR 173, Subpart I]

8 STATUTORY AUTHORITY: KRS 13B.170, KRS 194A.050, 211.090(3), 211.844,

9 211.846, 211.852(4) [, 10 CFR 20.2001-.2007, Appendix F to 20.2001-.2401, 49 CFR

10 173, Subpart I]

11 NECESSITY, FUNCTION, AND CONFORMITY: KRS 211.844 requires [authorizes] the

12 Cabinet for Health Services [~~Human Resources~~] to provide by administrative regulation

13 for the registration and licensing of the possession or use of a source [sources] of

14 ionizing or electronic product radiation and the handling and disposal of radioactive

15 waste. This administrative regulation provides waste disposal limitations for radioactive

16 material, and shall apply [applies] to a person [persons] disposing of radioactive

17 material or waste. This administrative regulation shall [is] not [~~intended to~~] establish

18 standards governing naturally occurring radioactive material (NORM) and waste.

19 Section 1. General Requirements. (1) A person or licensee shall dispose of [any]

20 radioactive material or waste only:

1 (a) By transfer to an authorized recipient as provided in 902 KAR 100:040,  
2 Section 13, or 902 KAR 100:022;

3 (b) By decay in storage;

4 (c) By release in an effluent [~~effluents~~] within the limits in 902 KAR 100:019,  
5 Section 10; or

6 (d) As authorized by [~~under~~] Sections 2, 3, 4, or 5 of this administrative  
7 regulation.

8 (2) A person shall be specifically licensed to receive waste containing radioactive  
9 material or waste from other persons for:

10 (a) Treatment prior to disposal;

11 (b) Treatment or disposal by incineration;

12 (c) Decay in storage; or

13 (d) Disposal at a land disposal facility licensed under 902 KAR 100:022.

14 Section 2. Method for Obtaining Approval of Proposed Disposal Procedures. A  
15 person, licensee, or applicant for a license may apply to the cabinet for approval of a  
16 proposed procedure [~~procedures~~], not [~~otherwise~~] authorized in 902 KAR 100:020,  
17 100:021, 100:022, 100:050, and 100:073, to dispose of radioactive material or waste  
18 generated by their activity [~~activities~~]. An application shall include:

19 (1) A description of the waste containing radioactive material to be disposed of,  
20 including the:

21 (a) Physical and chemical properties important to risk evaluation; and

22 (b) Proposed manner and conditions of waste disposal;[-]

23 (2) An analysis and evaluation of pertinent information on the nature of

1 the environment;[-]

2 (3) The nature and location of other potentially affected licensed and unlicensed  
3 facilities;[-] and

4 (4) An analysis and a procedure [~~Analyses and procedures~~] to ensure [that]  
5 doses are maintained ALARA and within the dose limits in 902 KAR 100:019, Sections  
6 3, 8, 9, and 10.

7 Section 3. Disposal by Release into Sanitary Sewerage. (1) A person or licensee  
8 may discharge licensed material into sanitary sewerage if the following conditions shall  
9 be [are] satisfied:

10 (a) The material shall be [is] readily soluble, or shall be [is] readily dispersible  
11 biological material, in water;

12 (b) The quantity of licensed or other radioactive material that the licensee  
13 released into the sewer in one (1) month, divided by the average monthly volume of  
14 water released into the sewer by the licensee, shall not exceed the concentration [listed]  
15 in 902 KAR 100:019, Section 44, Table III;

16 (c) If more than one (1) radionuclide shall be [is] released, the following  
17 conditions shall be satisfied:

18 1. The licensee shall determine the fraction of the limit in 902 KAR 100:019,  
19 Section 44, Table III, represented by discharges into the sanitary sewerage by dividing  
20 the actual monthly average concentration of each radionuclide released by the licensee  
21 into the sewer by the concentration of that radionuclide [listed] in 902 KAR 100:019,  
22 Section 44, Table III; and

23 2. The sum of the fractions for each radionuclide required by subsection (1)(c)1

1 of this section shall [~~does~~] not exceed unity; and

2 (d) The total quantity of licensed and other radioactive material that the licensee  
3 releases into the sewerage system in a year shall not exceed five (5) curies (185 GBq)  
4 of hydrogen-3, one (1) curie (37 GBq) of carbon-14, and one (1) curie of other  
5 radioactive materials combined.

6 (2) Excreta from an individual [~~individuals~~] undergoing medical diagnosis or  
7 therapy with radioactive material shall not be subject to the limitations contained in  
8 subsection (1) of this section.

9 Section 4. Treatment or Disposal by Incineration. A licensee may treat or dispose  
10 of licensed material by incineration only:

11 (1) In the amounts and forms specified in Section 5 of this administrative  
12 regulation; or

13 (2) As specifically approved by the cabinet and authorized by Section 2 of this  
14 administrative regulation.

15 Section 5. Disposal of Specific [~~De-Minimis~~] Wastes [~~Waste~~]. (1) A person or  
16 licensee may dispose of the following radioactive material without regard to its  
17 radioactivity:

18 (a) 0.05 microcurie or less of hydrogen-3, or [~~{[tritium]}~~], carbon-14, or iodine-125  
19 per gram of medium used for liquid scintillation counting or in vitro clinical or in vivo  
20 laboratory testing; and

21 (b) 0.05 microcurie (1.85 kBq) or less of hydrogen-3, carbon-14, or iodine-125  
22 per gram of animal tissue averaged over the weight of the entire animal.

23 (2) A licensee shall not dispose of tissue pursuant to subsection (1)(b) of

1 this section in a manner that may permit its use as food for a human [humans] or as  
2 animal feed.

3 (3) A licensee shall maintain records required by [~~pursuant to~~] Section 11 of this  
4 administrative regulation.

5 (4) A licensee shall comply with other applicable federal, state, and local  
6 regulations governing other toxic or hazardous properties of these materials.

7 Section 6. Classification of Radioactive Waste for Near-Surface [surface]  
8 Disposal. (1) Considerations. Determination of the classification of waste shall be given  
9 the following considerations:

10 (a)1. The concentration of long-lived radionuclides, and their shorter-lived  
11 precursors, whose potential hazard shall [will] persist long after a precaution  
12 [~~precautions~~] such as an institutional control [~~controls~~], improved waste form, and  
13 deeper disposal have ceased to be effective.

14 2. The precaution delays [~~These precautions delay~~] the time long-lived  
15 radionuclides may cause an exposure [exposures].

16 3. The magnitude of the potential dose is limited by the concentration and  
17 availability of the radionuclide at the time of exposure; and

18 (b) The concentration of a shorter-lived radionuclide [radionuclides] for which a  
19 requirement [requirements] on an institutional control [~~controls~~], waste form, and  
20 disposal methods are effective.

21 (2) Classes of waste.

22 (a)1. Class A waste shall be usually segregated from other waste classes at the  
23 disposal site.

1           2. The physical form and characteristics of Class A waste shall meet the  
2 minimum requirements [~~set forth~~] in Section 7 of this administrative regulation.

3           3. If Class A waste also meets the stability requirements [~~set forth~~] in Section 7(2)  
4 of this administrative regulation, it shall not be necessary to segregate Class A Waste  
5 [~~the waste~~] for disposal.

6           (b) 1. Class B waste shall meet more rigorous requirements on waste form to  
7 ensure stability after disposal.

8           2. The physical form and characteristics of Class B waste shall meet both the  
9 minimum and stability requirements [~~set forth~~] in Section 7 of this administrative  
10 regulation.

11           (c) 1. Class C waste shall meet more rigorous requirements on waste form to  
12 ensure stability and shall require additional measures at the disposal facility to protect  
13 against inadvertent intrusion.

14           2. The physical form and characteristics of Class C waste shall meet both the  
15 minimum and stability requirements [~~set forth~~] in Section 7 of this administrative  
16 regulation.

17           (3) Classification determined by long-lived radionuclides. If the waste contains  
18 only a radionuclide [~~radionuclides listed~~] in Table 1 of this subsection, classification shall  
19 be determined as follows:

20           (a) If the concentration does not exceed one-tenth (0.1) times the value in Table  
21 1, the waste shall be Class A.

22           (b) If the concentration exceeds one-tenth (0.1) times the value, but does not  
23 exceed the value in Table 1, the waste shall be Class C.

(c) If the concentration exceeds the value in Table 1, the waste shall not generally be acceptable for near-surface disposal.

(d) For waste containing a mixture [~~mixtures~~] of radionuclides [~~listed~~] in Table 1, the total concentration shall be determined by the sum of fractions rule described in subsection (7) of this section.

TABLE 1

Radionuclide	Concentration
	curies/cubic meter
C-14	8
C-14 in activated metal	80
Ni-59 in activated metal	220
Nb-94 in activated metal	0.2
Tc-99	3
I-129	0.08
Alpha emitting transuranic radio-nuclides with half-life greater than five (5) years	100*
Pu-241	3500*
Cm-242	20000*
Ra-226	100*

\*Units are nanocuries per gram.

(4) Classification determined by short-lived radionuclides. If the waste contains none of the radionuclides [~~listed~~] in Table 1 of subsection (3) of this section,



classification shall be determined based on the concentrations shown in Table 2 of this subsection. If a radionuclide [nuclide] is not [listed] in Table 2, it shall not need to be considered in determining the waste class.

(a) If the concentration does not exceed the value in Column 1, the waste shall be Class A.

(b) If the concentration exceeds the value in Column 1, but does not exceed the value in Column 2, the waste shall be Class B.

(c) If the concentration exceeds the value in Column 2, but does not exceed the value in Column 3, the waste shall be Class C.

(d) If the concentration exceeds the value in Column 3, the waste shall not generally be acceptable for near-surface disposal.

(e) For waste containing a mixture [mixtures] of the radionuclides [listed] in Table 2, the total concentration shall be determined by the sum of fractions rule described in subsection (7) of this section.

TABLE 2

Radionuclide	Concentration, Curies/cubic meter		
	Column 1	Column 2	Column 3
Total of all radionuclides with less than five (5) year half-life	700	*	*
H-3	40	*	*
Co-60	700	*	*

1	Ni-63	3.5	70	700
2	Ni-63 in activated metal	35	700	7000
3	Sr-90	0.04	150	7000
4	Cs-137	1	44	4600

5 \*Limits have not been ~~[There are not limits]~~ established for a radionuclide  
6 ~~[radionuclides]~~ in Class B or C waste. Practical considerations, such as the effects of  
7 external radiation and internal heat generation on transportation, handling, and disposal,  
8 limit the concentrations for these wastes. This waste shall be Class B unless the  
9 concentrations of other radionuclides in Table 2 determine the waste to be Class C  
10 independent of these radionuclides.

11 (5) Classification determined by both long-lived and short-lived radionuclides.

12 (a) If the waste contains a mixture of radionuclides, some ~~[listed]~~ in Table 1 of  
13 this section, and some ~~[listed]~~ in Table 2 of this section, classification shall be  
14 determined as follows:

15 (b) ~~(a)~~ If the concentration of a radionuclide ~~[listed]~~ in Table 1 does not exceed  
16 one-tenth (0.1) times the value ~~[listed]~~ in Table 1, the class shall be determined by the  
17 concentration of a radionuclide ~~[radionuclides listed]~~ in Table 2.

18 (c) ~~(b)~~ If the concentration of a radionuclide ~~[listed]~~ in Table 1 exceeds one-tenth  
19 (0.1) times the value, but does not exceed the value ~~[listed]~~ in Table 1, the waste shall  
20 be Class C, if the concentration of a radionuclide ~~[radionuclides listed]~~ in Table 2 does  
21 not exceed the value shown in Column 3 of Table 2.

22 (6) Classification of waste with a radionuclide ~~[radionuclides]~~ other than those  
23 ~~[listed]~~ in Tables 1 and 2. If the waste contains none of the radionuclides ~~[listed]~~ in

Table 1 or 2 of this section, the waste [it] shall be Class A.

(7) The sum of fractions rule for mixtures of radionuclides. The following shall be considered in determining classification for waste that contains a mixture of radionuclides:

(a) The sum of fractions shall be determined by dividing each radionuclide [radionuclide's] concentration by the appropriate limit and adding the resulting values.

(b) The appropriate limit [limits] shall be taken from the same column of the same table.

(c) The sum of the fractions for the column shall be less than one (1.0) if the waste class is determined by that column.

(d) Example: A waste contains Sr-90 in a concentration of fifty (50) curies [Ci]/cubic meter and Cs-137 in a concentration of twenty-two (22) curies [Ci]/cubic meter. Since the concentrations both exceed the values in Column 1, Table 2, they shall be compared to Column 2 values. For Sr-90 fraction,  $50/150 = 0.33$ ; for Cs-137 fraction,  $22/44 = 0.5$ ; the sum of the fractions = 0.83. Since the sum is less than one (1.0), the waste shall be Class B.

(8) Determination of concentrations in waste.

(a) If there is reasonable assurance that an indirect method [methods] may be correlated with an actual measurement [measurements], the concentration of a radionuclide may be determined by an indirect method [methods], such as, use of a scaling factor [factors] which relate the inferred concentration of one (1) radionuclide to another that is measured or radionuclide material accountability.

(b) If the units are expressed as nanocuries per gram, the concentration of

1 a radionuclide may be averaged over the volume or weight of the waste.

2 Section 7. Radioactive Waste Characteristics. (1) The following shall be minimum  
3 requirements for a class [~~all-classes~~] of waste and shall be [~~are~~] intended to facilitate  
4 handling and provide protection of health and safety of personnel at the disposal site:

5 (a) Waste shall be packaged in conformance with the conditions of the license  
6 issued to the site operator to which the waste shall [~~will~~] be shipped. If the conditions of  
7 the site license are more restricted than the provisions of this administrative regulation,  
8 the site license conditions shall govern.

9 (b) Waste shall not be packaged for disposal in cardboard or a fiberboard box  
10 [~~boxes~~].

11 (c) Liquid waste shall be solidified or packaged in sufficient absorbent material to  
12 absorb twice the volume of the liquid.

13 (d) Solid waste containing liquid shall contain as little freestanding and  
14 noncorrosive liquid as is reasonably achievable. The liquid shall not exceed one (1)  
15 percent of the volume.

16 (e) Waste shall not be readily capable of:

- 17 1. Detonation;  
18 2. Explosive decomposition or reaction at normal pressures and temperatures; or  
19 3. Explosive reaction with water.

20 (f) Waste shall not contain, or be capable of generating, quantities of toxic gases,  
21 vapors, or fumes harmful to a person [~~persons~~] transporting, handling, or disposing of  
22 the waste. This shall not apply to radioactive gaseous waste packaged in accordance  
23 with paragraph (h) of this subsection.

1 (g) Waste shall not be pyrophoric. Pyrophoric material [materials] contained in  
2 waste shall be treated, prepared, and packaged to be nonflammable.

3 (h) Waste in a gaseous form shall be packaged at a pressure that shall not  
4 exceed one and five-tenths (1.5) atmospheres at twenty (20) degrees Centigrade. Total  
5 activity shall not exceed 100 curies per container.

6 (i) Waste containing hazardous, biological, pathogenic, or infectious material  
7 shall be treated to reduce to the maximum extent practicable the potential hazard from  
8 the nonradiological material [materials].

9 (2) Stability shall [~~is intended to~~] ensure that the waste shall not structurally  
10 degrade and affect overall stability of the site through slumping, collapse, or other failure  
11 of the disposal unit and lead to water infiltration. Stability shall also be a factor in limiting  
12 exposure to an inadvertent intruder, since it provides a recognizable and nondispersible  
13 waste. The following requirements shall provide stability of the waste:

14 (a) Waste shall have structural stability.

15 1. A structurally stable waste form shall maintain its physical dimension  
16 [~~dimensions~~] and its form under expected disposal conditions, such as:

- 17 a. Weight of overburden and compaction equipment;  
18 b. Presence of moisture and microbial activity; and  
19 c. Internal factors such as radiation effects and chemical changes.

20 2. Structural stability may be provided by:

- 21 a. The waste form itself;  
22 b. Processing the waste to a stable form; or  
23 c. Placing the waste in a disposal container or structure that provides

1 stability after disposal.

2 (b) Unless otherwise exempted in subsection (1)(c) and (d) of this section, liquid  
3 waste, or waste containing liquid, shall be converted into a form that contains as little  
4 free standing and noncorrosive liquid as is reasonably achievable. The liquid shall not  
5 exceed one (1) percent of the volume of the waste if the waste is in a disposal container  
6 designed to ensure stability, or five-tenths (0.5) percent of the volume of the waste for  
7 waste processed to a stable form.

8 (c) Void spaces within and between the waste and its package shall be  
9 eliminated.

10 Section 8. Labeling. Each package of waste shall be clearly labeled to identify if it  
11 is Class A, Class B, or Class C waste, in accordance with Section 6 of this  
12 administrative regulation.

13 Section 9. Transfer for Disposal and Manifests. (1) The requirements of this  
14 section and Section 10 of this administrative regulation shall:

15 (a) Control transfers of low-level radioactive waste intended for disposal at a land  
16 disposal facility as established [defined] in 902 KAR 100:022;

17 (b) Establish a manifest tracking system; and

18 (c) Supplement existing requirements concerning transfers and recordkeeping for  
19 the wastes being transferred.

20 (2) A shipment of radioactive waste intended for disposal at a licensed land  
21 disposal facility shall be accompanied by a shipment manifest as specified in Section  
22 10(1) of this administrative regulation.

23 (3) The shipment manifest shall include a certification by the waste generator

1 as specified in Section 10(12) [(3)] of this administrative regulation.

2 (4) A person involved in the transfer for disposal and disposal of waste, including  
3 the waste generator, waste collector, waste processor, and disposal facility operator,  
4 shall comply with the requirements specified in Section 10(13) [(4)] of this administrative  
5 regulation.

6 Section 10. Requirements for Low-level Waste Transfers [Transfer] Intended for  
7 Disposal at Land Disposal Facilities and Manifests. (1) A [shipment-of] waste generator,  
8 collector, or processor who transports, or offers for transportation, low-level radioactive  
9 waste intended for ultimate disposal at [as-to] a licensed low-level radioactive waste  
10 land disposal facility shall prepare [be accompanied by] a [shipment] manifest reflecting  
11 information requested on the following applicable forms, or their equivalent:

12 (a) NRC Form 540, Uniform Low-Level Radioactive Waste Manifest, Shipping  
13 Paper;

14 (b) NRC Form 541, Uniform Low-Level Radioactive Waste Manifest, Container  
15 and Waste Description; and,

16 (c) If necessary, NRC Form 542, Uniform Low-Level Radioactive Waste  
17 Manifest, Manifest Index and Regional Compact Tabulation.

18 (2) NRC Forms 540 and 540A shall be completed and shall physically  
19 accompany the pertinent low-level waste shipment.

20 (3) Upon agreement between shipper and consignee, NRC Forms 541, 541A,  
21 542 and 542A may be completed, transmitted, and stored in electronic media with the  
22 capability for producing legible, accurate, and complete records on the respective forms.

23 (4) A licensee shall not be required by the cabinet to comply with the

1 manifesting requirements of this part, if they ship:

2 (a) LLW for processing and expect its return, for example, for storage as  
3 prescribed by their license, prior to disposal at a licensed land disposal facility;

4 (b) LLW that is being returned to the licensee who is the waste generator or  
5 generator, as defined in 902 KAR 100:010; or

6 (c) Contaminated radioactive material to a waste processor that becomes the  
7 processor's residual waste.

8 (5) For guidance in completing a form, refer to instructions that accompany the  
9 form.

10 (6) A Copy of a manifest required by this section may be legible carbon copies,  
11 photocopies, or computer printouts that reproduce the data in the format of the uniform  
12 manifest.

13 (7) Information on hazardous, medical, or other waste, required to meet  
14 Environmental Protection Agency regulations, for example, 40 CFR Parts 259 and 261,  
15 is not addressed in this section, and shall be provided on the required EPA form. The  
16 required EPA form shall accompany the Uniform Low-Level Radioactive Waste Manifest  
17 required by this section.

18 [~~The shipment manifest may be legible carbon copies or photocopies. ]~~

19 (8) [~~(a)~~] The shipper of the radioactive waste, shall provide the following  
20 information on the uniform [shipment] manifest [shall contain]:

21 (a) [~~1-~~] The name, facility address, and telephone number of the licensee  
22 shipping [person generating] the waste; [and]

23 (b) An explicit declaration indicating whether the shipper shall be acting as



1 a waste generator, collector, processor, or a combination of these identifiers for  
2 purposes of the manifested shipment; and

3 (c) [2-] The name, address, and telephone number, or the name and U.S.  
4 Environmental Protection Agency hazardous identification number, for the carrier [of the  
5 ~~person~~] transporting the waste [to the land disposal facility].

6 (d) [(b)] The shipper of the radioactive waste shall provide the following  
7 information regarding the waste shipment on the uniform manifest [shall indicate as  
8 ~~completely as practicable~~]:

9 1. The date of the waste shipment [A physical description of the waste];

10 2. The total number of packages or disposal containers [Waste volume];

11 3. The total disposal volume and disposal weight in the shipment [Radionuclide  
12 ~~identity and quantity~~];

13 4. The total radionuclide activity in the shipment [Total radioactivity]; [and]

14 5. The activity of each of the radionuclides, hydrogen-3, carbon-14, technetium-  
15 99, and iodine-129 contained in the shipment; [Principal chemical form]

16 6. The total masses of uranium-233, uranium-235, and plutonium in special  
17 nuclear material; and

18 7. The total mass of uranium and thorium in source material.

19 (9)The shipper of the radioactive waste shall provide the following information on  
20 the uniform manifest regarding the waste and disposal container of waste in the  
21 shipment:

22 (a) An alphabetic, or numeric identification, that uniquely identifies each disposal  
23 container in the shipment;

1           (b) A physical description of the disposal container, including the manufacturer  
2 and model of a high integrity container;

3           (c) The volume displaced by the disposal container;

4           (d) The gross weight of the disposal container, including the waste;

5           (e) For waste consigned to a disposal facility, the maximum radiation level at the  
6 surface of each disposal container;

7           (f) A physical and chemical description of the waste;

8           (g) The total weight percentage of a chelating agent for waste containing more  
9 than 0.1% of a chelating agent by weight, plus the identity of the principal chelating  
10 agent;

11           (h) The approximate volume of waste within a container;

12           (i) The sorbing or solidification media, if present, and the identity of the  
13 solidification media vendor and brand name;

14           (j) 1. The identity and activity of a radionuclide contained in each container;

15           2. The masses of uranium-233, uranium-235, and plutonium in special nuclear  
16 material; and

17           3. The masses of uranium and thorium in source material.

18           4. For discrete waste types, for example, activated materials, contaminated  
19 equipment, mechanical filters, sealed sources or devices, and wastes in solidification or  
20 stabilization media, the identities and activities of individual radionuclides associated  
21 with or contained on these waste types within a disposal container shall be reported.

22           (k) The total radioactivity within each container;

23           (l) The classification of the waste in accordance with Section 6 of

1 this administrative regulation, for wastes cosigned to a disposal facility; and

2 (m) Waste not meeting the structural stability requirements of Section 7(2) of this  
3 administrative regulation shall be identified.

4 (10) The shipper of the radioactive waste shall provide the following information  
5 on the uniform manifest regarding a waste shipment delivered without a disposal  
6 container;

7 (a) The approximate volume and weight of the waste;

8 (b) A physical and chemical description of the waste;

9 (c) The total weight percentage of a chelating agent if the chelating agent  
10 exceeds 0.1% by weight, plus the identity of the principal chelating agent;

11 (d) The classification of the waste in accordance with Section 6 of this  
12 administrative regulation for waste cosigned to a disposal facility;

13 (e) Waste not meeting the structural stability requirements of Section 7(2) of this  
14 administrative regulation shall be identified;

15 (f) 1. The identity and activity of a radionuclide contained in the waste;

16 2. The masses of uranium-233, uranium-235, and plutonium in special nuclear  
17 material;

18 3. The masses of uranium and thorium in source material; and

19 (g) For a waste cosigned to a disposal facility, the maximum radiation level at the  
20 surface of the waste.

21 (11) (a) The origin of the LLW resulting from activities of a processor may be  
22 attributable to one or more generators, including, a waste generator. The requirements  
23 in this subsection apply to:

1           1. A disposal container enclosing a mixture of waste originating from different  
2 generators; and

3           2. A mixture of waste shipped in a form without a disposal container, for which  
4 portions of the mixture within the shipment originate from different generators.

5           (b) For a homogeneous mixture of a waste, such as incinerator ash, provide the:

6           1. Waste description applicable to the mixture; and

7           2. Volume of the waste attributed to each generator;

8           (c) For a heterogeneous mixture of a waste such as:

9           1.     The combined products from a large compactor, identify each generator  
10 contributing waste to the disposal container; and

11           2.     A discrete waste type, for example, activated materials, contaminated  
12 equipment, mechanical filters, sealed sources or devices, and wastes in solidification or  
13 stabilization media, the identity and activity of individual radionuclides contained on the  
14 waste type within the disposal container;

15           (d) For a generator, the following information shall be provided:

16           1. The volume of waste within the disposal container;

17           2. A physical and chemical description of the waste, including, if present, the  
18 solidification agent;

19           3. The total weight percentage of a chelating agent for a disposal container  
20 containing more than 0.1% of a chelating agent by weight, plus the identity of the  
21 principal chelating agent;

22           4. The sorbing or solidification media, if present, and the identity of the  
23 solidification media vendor and brand name if the media is claimed to meet stability

1 requirements in Section 7(2) of this administrative regulation; and

2 5.a.Radionuclide identity and activity contained in the waste;

3 b. The mass of uranium-233, uranium-235, and plutonium in special nuclear  
4 material; and

5 c. The mass of uranium and thorium in source material if contained in the waste.

6 (12)(a) An authorized representative of the waste generator, processor, or  
7 collector shall certify by signing and dating the shipment manifest that the transported  
8 materials are:

9 1. Properly classified;

10 2. Described;

11 3. Packaged;

12 4. Marked;

13 5. Labeled; and

14 6. In proper condition for transportation according to the applicable regulations  
15 of the Department of Transportation and 902 KAR 100:070; and

16 (b) A collector in signing the certification shall certify that nothing has been done  
17 to the collected waste which would invalidate the waste generator's certification.

18 ~~[(c) The solidification agent shall be specified.~~

19 ~~(d) Waste containing more than one-tenth (0.1) percent chelating agents by~~  
20 ~~weight shall be identified and the weight percentage of the chelating agent estimated.~~

21 ~~(e) Waste classified as Class A, Class B, or Class C in Section 6 of t~~  
22 ~~his administrative regulation shall be clearly identified in the manifest.~~

23 ~~(f) The total quantity of the specifically indicated radionuclides H-3, C-14, Tc-99,~~

1 and I-129 shall be shown on the manifest.

2 (2) The manifest required in subsection (1) of this section may be shipping  
3 papers used to meet U.S. Department of Transportation or U.S. Environmental  
4 Protection Agency regulations or requirements of the receiver if all the required  
5 information is included.

6 (3) A manifest shall include a certification by the waste generator that the  
7 transported materials are properly classified, described, packaged, marked, labeled,  
8 and conditioned for transportation in compliance with 49 CFR 173, Subpart I and 902  
9 KAR 100:070. An authorized representative of the waste generator shall sign and date  
10 the manifest.]

11 (13) [(4)] A licensee who transfers waste to a licensed waste processor for waste  
12 treatment or repackaging [who treats or repackages waste] shall comply with the  
13 requirements of paragraphs (d) through (l) [(h)] of this subsection. A licensee who  
14 transfers waste to a land disposal facility or a licensed waste collector shall comply with  
15 the following requirements:

16 (a) Prepare waste so that the waste shall be [is] classified according to Section 6  
17 of this administrative regulation and shall meet [meets] the waste characteristics  
18 requirements in Section 7 of this administrative regulation; [-]

19 (b) Label each disposal container, or transport container if potential radiation  
20 hazards preclude labeling of the individual disposal container, [package] of waste to  
21 identify if the waste is Class A, Class B, or Class C, or greater than Class C waste, in  
22 accordance with Section 6 of this administrative regulation; [-]

23 (c) Conduct a quality assurance [control] program including, [to include]

1 management evaluation of audits, to assure compliance with Sections 6 and 7 of this  
2 administrative regulation.

3 (d) Prepare the NRC Uniform Low-Level Radioactive Waste Manifest as required  
4 by this subsection; ~~[shipping manifests to meet the requirements of subsection (1) and~~  
5 ~~(3) of this section.]~~

6 (e) Forward a copy or electronically transfer the Uniform Low-Level Radioactive  
7 Waste Manifest to the intended consignee so that either:

8 1. Receipt of the manifest precedes the LLW shipment; or

9 2. The manifest shall be delivered to the consignee with the waste at the time the  
10 waste shall be transferred to the consignee.

11 3. Using both 1. and 2. is also acceptable ~~[to the intended recipient, at the time of~~  
12 ~~shipment, or deliver to a collector at the time the waste is collected, obtaining~~  
13 ~~acknowledgment of receipt in the form of a signed copy of the manifest or equivalent~~  
14 ~~documentation from the collector].~~

15 (f) Include NRC Form 540 and Form 540A, if required, ~~[one (1) copy of the~~  
16 ~~manifest]~~ with the shipment regardless of the option chosen in subsection 12(e) of this  
17 section;[-]

18 (g) Receive acknowledgement of the receipt of the shipment in the form of a  
19 signed copy of NRC Form 540;

20 (h) Retain a copy of or electronically store the Uniform Low-Level Radioactive  
21 Waste Manifest and ~~[the manifest with]~~ documentation of acknowledgment of receipt as  
22 the record of transfer of licensed material as required by 902 KAR 100:040; [-] and

23 (i) ~~[(h)]~~ For a shipment ~~[shipments],~~ or parts of a shipment, for which

1 acknowledgment of receipt has not been received within the times established [set forth]  
2 in this section, conduct an investigation in accordance with subsection (16) [(8)] of this  
3 section.

4 (14) [(5)] A waste collector licensee who handles only prepackaged waste shall:

5 (a) Acknowledge receipt of the waste from the generator within one (1) week of  
6 receipt by returning a signed copy of NRC Form 540; [the manifest or equivalent  
7 documentation to the generator.]

8 (b) 1. Prepare a new manifest to reflect consolidated shipments that meet the  
9 requirements of this section;

10 2. The waste collector shall ensure that, for each container of waste in the  
11 shipment, the manifest identifies the generator of that container of waste; [-

12 1. The new manifest shall serve as a listing or index for the detailed generator  
13 manifests.

14 2. Copies of the generator manifests shall be a part of the new manifest.

15 3. The waste collector may prepare a new manifest without attaching the  
16 generator manifests if the new manifest contains for each package the information  
17 specified in subsection (2) of this section.

18 4. The collector licensee shall certify that nothing has been done to the waste  
19 which would invalidate the generator's certification.]

20 (c) Forward a copy or electronically transfer the Uniform Low-Level Radioactive  
21 Waste Manifest to the intended consignee so that either:

22 1. Receipt of the manifest precedes the LLW shipment; or

23 2. The manifest shall be delivered to the consignee with the waste at the time



1 the waste shall be transferred to the consignee;

2 3. Using both 1. and 2. is also acceptable ~~[of the new manifest to the land~~  
3 ~~disposal facility operator at the time of shipment].~~

4 (d) Include NRC Form 540 and Form 540A, if required, with the shipment  
5 regardless of the option chosen in subsection 14(c) of this section; ~~[the new manifest~~  
6 ~~with the shipment to the disposal site.]~~

7 (e) Receive acknowledgement of the receipt of the shipment in the form of a  
8 signed copy of NRC Form 540;

9 (f) Retain a copy of or electronically store the Uniform Low-Level Radioactive  
10 Waste Manifest and ~~[the manifest with]~~ documentation of acknowledgment of receipt as  
11 the record of transfer of licensed material as required by 902 KAR 100:040; ~~[- and retain~~  
12 ~~information from generator manifests until disposition is authorized by the cabinet.]~~

13 (g) For a shipment ~~[shipments]~~, or parts of a shipment, for which  
14 acknowledgment of receipt is not received within the time established ~~[times set forth]~~ in  
15 this section, conduct an investigation in accordance with subsection (16) ~~[(8)]~~ of this  
16 section;

17 (h) Notify the shipper and the cabinet if a shipment, or part of a shipment, has not  
18 arrived within sixty (60) days after receipt of an advance manifest, unless notified by the  
19 shipper that the shipment has been cancelled.

20 (15) [(6)] A licensed waste processor who treats or repackages waste shall:

21 (a) Acknowledge receipt of the waste from the shipper ~~[generator]~~ within one (1)  
22 week of receipt by returning a signed copy of the manifest or equivalent documentation;  
23 ~~[to the generator.]~~

(b) Prepare a new manifest that meets the requirements of this subsection;  
~~[subsections (1), (2), and (3) of this section.]~~

1. Preparation of the new manifest shall reflect that the processor shall be ~~[is]~~  
responsible for meeting these requirements; and ~~[the waste.]~~

2. For each container of waste in the shipment, the manifest shall identify the  
waste generators, the preprocessed waste volume, and the other information as  
required in subsection (16) of this section.

(c) Prepare waste so the waste shall be ~~[is]~~ classified according to Section 6 of  
this administrative regulation and meets the waste characteristics requirement in  
Section 7 of this administrative regulation; ~~[-]~~

(d) Label each package of waste to identify ~~[if]~~ the waste as ~~[is]~~ Class A, Class B,  
or Class C, in accordance with Sections 6 and 8 of this administrative regulation; ~~[-]~~

(e) Conduct a [A] quality control program ~~[shall be conducted]~~ to assure  
compliance with Sections 6 and 7 of this administrative regulation. The program shall  
include management evaluation of audits; ~~[-]~~

(f) Forward a copy or electronically transfer the Uniform Low-Level Radioactive  
Waste Manifest to the intended consignee so that either:

1. Receipt of the manifest precedes the LLW shipment; or  
2. The manifest shall be delivered to the consignee with the waste at the time  
the waste shall be transferred to the consignee.

3. Using both 1. and 2. is also acceptable ~~[of the new manifest to the disposal  
site operator or waste collector at the time of shipment, or deliver to a collector at the  
time the waste is collected, obtaining acknowledgment of receipt in the form of a signed~~

~~copy of the manifest or equivalent documentation by the collector].~~

(g) Include NRC Form 540 and Form 540A, if required ~~[the new manifest]~~ with the shipment regardless of the option chosen in subsection (15)(f) of this section; [-]

(h) Retain a copy of or electronically store the Uniform Low-Level Radioactive Waste Manifest and ~~[copies of original manifests and new manifests with]~~ documentation of acknowledgment of receipt as the record of transfer of licensed material required by 902 KAR 100:040; ~~[-]~~

(i) Receive acknowledgement of the receipt of the shipment in the form of a signed copy of NRC Form 540;

(j) For a shipment or part of a shipment for which acknowledgment of receipt is not received within the time established ~~[times set forth]~~ in this section, conduct an investigation in accordance with subsection (16) ~~[(8)]~~ of this section; and [-]

(k) Notify the shipper and the cabinet when a shipment, or part of a shipment, has not arrived within sixty (60) days after receipt of an advance manifest, unless notified by the shipper that the shipment has been cancelled.

(16) ~~[(7)]~~ The land disposal facility operator shall:

(a) Acknowledge receipt of the waste within one (1) week of receipt by returning, a signed copy of the manifest or equivalent documentation, to the licensee that last possessed the waste and transferred the waste to the operator. If the ~~[The]~~ returned copy of the manifest or equivalent documentation indicates ~~[shall indicate]~~ discrepancies between materials ~~[listed]~~ on the manifest and materials received, copies or electronic transfer of the affected forms shall be returned indicating the discrepancy; [-]

1 (b) Maintain a copy of completed manifest, or equivalent documentation, and  
2 electronically store the information required by 10 CFR 61.80(l) until the cabinet  
3 terminates the license; and ~~[authorizes disposition.]~~

4 (c) Notify the shipper, ~~[(i.e., the]~~ generator, ~~[the]~~ collector, or processor ~~[)]~~ and the  
5 cabinet if a shipment, or part of a shipment, has not arrived within sixty (60) days after  
6 the advance manifest was received, unless notified by the shipper that the shipment has  
7 been cancelled.

8 ~~(17)~~ ~~[(8)]~~ A shipment or part of a shipment for which acknowledgment is not  
9 received within the time established ~~[times set forth]~~ in this section shall be:

10 (a) Investigated by the shipper if the shipper has not received notification of  
11 receipt within twenty (20) days after transfer; and

12 (b) Traced and reported.

13 1. The investigation shall include tracing the shipment and filing a report with the  
14 cabinet.

15 2. A licensee who conducts a trace investigation shall file a written report with the  
16 cabinet within two (2) weeks of completion of the investigation.

17 Section 11. Records. (1) A licensee shall maintain a record ~~[records]~~ in the same  
18 units used in this administrative regulation.

19 (2) A record ~~[Records]~~ of disposal of licensed material required by ~~[made~~  
20 ~~pursuant to]~~ this administrative regulation shall be maintained until the cabinet  
21 authorizes disposition or in accordance with 902 KAR 100:073, Section 28.

22 (3) A licensee shall maintain a record ~~[records]~~ of the disposal of licensed  
23 materials required by ~~[made pursuant to]~~ 902 KAR 100:022 and Sections 2, 3, 4, and 5

1 of this administrative regulation, and disposal by burial in soil, including burials  
2 authorized before January 28, 1981.

3 (4) A licensee shall retain the records required in subsection (3) of this section  
4 until the cabinet terminates each pertinent license requiring the record.

5 Section 12. Annual Report of Waste Generated. (1) A licensee issued a specific  
6 license, pursuant to 902 KAR 100:040 shall file an annual report with the cabinet  
7 containing information regarding low-level radioactive waste associated with activities  
8 authorized by the license. This report shall be filed if the licensee was, or was not, a  
9 waste generator during the reporting period.

10 (2) The report shall contain information regarding the waste for a period of one  
11 (1) calendar year and shall be filed no later than January 15 of the following year.

12 (3) The report shall be filed on a form provided by the cabinet and shall contain  
13 types and amounts of generated waste and estimates of future wastes to be generated.

14 Section 13. Incorporation by Reference.

15 (1) NRC Forms 540, 540A, 541, 541A, 542 and 542A are incorporated by  
16 reference.

17 (2) This material may be inspected, copied, or obtained, subject to applicable  
18 copyright law, at the Department for Public Health, Office of the Commissioner, 275  
19 East Main Street, Frankfort, Kentucky 40621, Monday through Friday 8 a.m. until 4:30  
20 p.m.

902 KAR 100:021

Disposal of radioactive material

Reviewed

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Rice C. Leach, M.D. Commissioner Department for Public Health	Date
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Adopted

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Marcia R. Morgan, Secretary Cabinet for Health Services	Date
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A public hearing on this regulation will be held December 21, 2001 at 9:00a.m. in the Cabinet for Health Services Auditorium, 1st floor, Department for Health Services Building, 275 East Main Street, Frankfort, Kentucky. Individuals interested in attending shall notify this agency in writing by December 14, 2001. If no notice of intent to attend the hearing is received by that date, the hearing may be canceled. The hearing is opened to the public. Any person who attends will be given an opportunity to comment on the proposed administrative regulation. If you do not wish to attend the public hearing, you may submit written comments on the proposed administration regulation. Send written notice of intent to attend the public hearing or written comments to:

Jill Lewis  
Cabinet Regulation Coordinator  
Cabinet for Health Services  
Office of Counsel  
275 East Main Street – 4W-C  
Frankfort, KY 40621  
Phone: (502)564-7905  
Fax: (502)564-7573

## REGULATORY IMPACT ANALYSIS AND TIERING STATEMENT

Administrative Regulation #: 902 KAR 100:021

Contact person: John Volpe

- (1) Provide a brief summary of:
  - (a) What this administrative regulation does: This administrative regulation provides waste disposal limitations for radioactive material, and applies to a person disposing of radioactive material or waste.
  - (b) The necessity of this administrative regulation: This administrative regulation provides equivalent requirements for a person disposing of radioactive material or waste to those of the U.S. Nuclear Regulatory Commission.
  - (c) How this administrative regulation conforms to the content of the authorizing statutes: KRS 211.842 and 211.844 requires the Cabinet for Health Services to provide by administrative regulation for the registration and licensing of the possession or use of sources of ionizing or electronic product radiation and the handling and disposal of radioactive waste.
  - (d) How this administrative regulation currently assists or will assist in the effective administration of the statutes: This regulation provides the requirements for the disposal of radioactive material or wastes.
- (2) If this is an amendment to an existing administrative regulation, provide a brief summary of:
  - (a) How the amendment will change this existing administrative regulation: This amendment established the requirements for transfer of low-level radioactive waste intended for disposal at a licensed land disposal facility and establishes manifest requirements for shipping to a processor of low-level radioactive waste.
  - (b) The necessity of the amendment to this administrative regulation: This administrative regulation provides equivalent requirements for disposal of radioactive material or waste to those of the U.S. Nuclear Regulatory Commission.
  - (c) How the amendment conforms to the content of the authorizing statutes: KRS 211.844 requires the cabinet to provide regulations for the licensing and registration of sources of radiation and for the disposal of radioactive material or waste.
  - (d) How the amendment will assist in the effective administration of the statutes: The amendments will provide a mechanism for the cabinet to ensure the proper disposition of radioactive waste from a licensed waste generator to a processor and a disposal site. The amendment requires specific documentation to ensure disposition of low-level waste and shipment of low-level radioactive waste to a processor.
- (3) List the type and number of individuals, businesses, organizations, or state and local governments affected by this administrative regulation: Any radioactive material licensee who ships radioactive material or waste for disposal will be impacted by the amendment.

- (4) Provide an assessment of how the above group or groups will be impacted by either the implementation of this administrative regulation, if new, or by the change if it is an amendment: Licensees will be required to provide specific documentation to ensure disposition of low-level waste and shipment of low-level radioactive waste to a processor.
- (5) Provide an estimate of how much it will cost to implement this administrative regulation:
  - (a) Initially: None
  - (b) On a continuing basis: None
- (6) What is the source of the funding to be used for the implementation and enforcement of this administrative regulation: Fees from the licensing of radioactive material users.
- (7) Provide an assessment of whether an increase in fees or funding will be necessary to implement this administrative regulation, if new, or by the change if it is an amendment: No increase in fees or funding will be necessary to implement this amendment to the regulation.
- (8) State whether or not this administrative regulation establishes any fees or directly or indirectly increases any fees: This administrative regulation does not establish any fees nor does it directly or indirectly increase any fees.
- (9) TIERING: Is tiering applied? (Explain why tiering was or was not used)  
Tiering was not appropriate in this administrative regulation because the administrative regulation applies equally to all licensees who may ship radioactive material or waste for disposal.



FEDERAL MANDATE ANALYSIS COMPARISON  
(Use Additional Sheets if Necessary)

Reg. No. 902 KAR 100:021

Agency Contact John A. Volpe, Ph.D.

1. Federal statute or regulation constituting the federal mandate. The Atomic Energy Act of 1954, as amended, and 10 CFR 20.2001-.2007, Appendix G to 20.2001-.2401, as promulgated by the U.S. Nuclear Regulatory Commission.
2. State compliance standards. Administrative regulation provides radioactive material licensees with requirements for the transfer of low-level radioactive waste intended for disposal at a licensed land disposal facility and establishes manifest requirements for shipping to a processor of low-level radioactive waste.
3. Minimum or uniform standards contained in the federal mandate. This amendment will bring about compatibility with U.S. Nuclear Regulatory Commission's requirements.
4. Will this administrative regulation impose stricter requirements, or additional or different responsibilities or requirements, than those required by the federal mandate? No
5. Justification for the imposition of the stricter standard, or additional or different responsibilities or requirements. Administrative regulation provides equivalent requirements for disposal of radioactive material or waste to those of the U.S. Nuclear Regulatory