

**ANDERSEN AFB RADIATION SAFETY OFFICER
SHIPMENT QUALITY ASSURANCE CHECKLIST**

Date: 30 Oct 13 Shipper: DLA Distributions Destination: Pearl Harbor Navy, HI

Item Description	Radionuclide	Activity Each	Number of Items	Total Activity
Cardboard Box	Cs - 137	29.6 KBq	4	118.4 KBq

Instrument: Mfgr Fluke Model 451P S/N J287007 Cal date 24 Jul 13 Alpha Probe S/N F041042

Radiation Package Survey Results (gamma): Background: 10 uR/h Surface 10 uR/h 1 meter 10 uR/h

Radiation Package Swipe Results (Alpha): Area Swiped (cm²) 300 Background: 0 Result

Person completing checklist SSgt Jeremy Boldt



(Signature)

EXCEPTED PACKAGE SHIPMENT

YES NO

- 1. Strong tight package (package that will not leak material during conditions normally incident to transportation).
- 2. Radiation level at any point on the external surface of package less than or equal to 0.5 mRem/hr.
- 3. Removable surface contamination less than 2.2 dpm/cm² (alpha) or 22 dpm/cm² (beta/gamma).
- 4. Outside of the inner package or outside of package itself bears the marking "Radioactive".
- 5. Package contains less than 15 grams of U-235 (check yes if U-235 not present).
- 6. Notice enclosed in or on the package includes consignor or consignee and one of the following, as appropriate:

- a. This package conforms to the conditions and limitations specified in 49CFR 173.421 for radioactive material, excepted package - limited quantity of material, UN2910;
- b. This package conforms to the conditions and limitations specified in 49CFR 173.422 for radioactive material, excepted package - instruments or articles UN2915; or
- c. This package conforms to the conditions and limitations specified in 49CFR 173.424 for radioactive material, excepted package - articles manufactured from depleted uranium, UN2910.

- 7. Activity less than 173.423. Shipment as:

- a. Limited quantity: Permissible package limit: 0.030 Ci Actual package activity: 0.0000032 Ci
- b. Instrument or article: Permissible package limit: Actual package activity:
Permissible maximum article activity: Actual maximum article activity:

- 8. For instruments and articles, the radiation level at 10 cm from any point on the external surface of any unpackaged instrument or article does not exceed 10 mRem/hr.

IMPORTANT: If you checked "no" to any item above, contact Andersen AFB Radiation Safety Officer for further instructions.

COMMENTS:

TYPE A QUANTITIES FOR SELECTED RADIONUCLIDES
(49 CFR 173.435)

ISOTOPE	A1(Ci)	A2(Ci)
²⁴¹ Am	54.1	0.00541
¹³³ Ba	40	10
¹⁴ C	1000	60
²⁵² Cf	2	0.009
⁵⁷ Co	90	90
⁶⁰ Co	7	7
¹³⁷ Cs	30	10
⁵⁵ Fe	1000	1000
³ H	1000	1000
(compressed, uncompressed, luminous paint, absorbed on solid carrier in water)		
³ H (other forms)	20	20
¹²³ I	50	50
¹²⁵ I	1000	50
¹²⁹ I	1000	2
¹³¹ I	40	10
¹⁹² Ir	20	10
^{85m} Kr (uncompressed)	100	100
^{85m} Kr (compressed)	3	3
⁸⁵ Kr (uncompressed)	1000	1000
⁸⁵ Kr (compressed)	5	5
⁶³ Ni	1000	100
³² P	30	30
²¹⁰ Po	200	0.2
²³⁹ Pu	2	0.002
²⁴⁰ Pu	2	0.002
²²⁶ Ra	10	0.05
¹⁸⁷ Re	Unlimited	Unlimited
⁹⁰ Sr	10	0.04
^{99m} Tc	100	100
⁹⁹ Tc	1000	25
²³² Th	Unlimited	Unlimited
Th (Nat)	Unlimited	Unlimited
²³⁸ U	Unlimited	Unlimited
U (depleted)	Unlimited	Unlimited
U (Nat)	Unlimited	Unlimited

OTHER DEFINITIONS

TRANSPORTATION INDEX (TI) - unit-less number, rounded up to nearest first decimal place; maximum mR/hr at one meter from package.

TYPE A PACKAGE - does not require competent authority approval; limited to A1 or A2 values (White I, Yellow II or Yellow III)

TYPE B PACKAGE - requires approval; NOT limited to A1 or A2 values (White I, Yellow II or Yellow III)

ACTIVITY LIMITS-LIMITED QUANTITY, INSTRUMENTS & ARTICLES
(49 CFR 173.425)

INSTRUMENTS & ARTICLES			
NATURE OF CONTENTS	INSTRUMENT LIMIT*	Package Limit	Limited Quantity
SOLIDS			
Special Form	10 ⁻² A1	A1	10 ⁻³ A1
Normal Form*	10 ⁻² A2	A2	10 ⁻³ A2
LIQUIDS			
³ H Water			
<0.1 Ci/liter			1000 Ci
0.1 - 1.0 Ci/liter			100 Ci
>1.0 Ci/liter			1.0 Ci
Other liquids	10 ⁻³ A2	10 ⁻¹ A2	10 ⁻⁴ A2
GASES			
** ³ H	20 Ci	200 Ci	20 Ci
Special Form	10 ⁻³ A1	10 ⁻² A1	10 ⁻³ A1
Other Form	10 ⁻³ A2	10 ⁻² A2	10 ⁻³ A2
NOTES			
* For mixture of Radionuclides, see 49 CFR 173.433(d)			
** These values also apply to Tritium in activated luminous paint and Tritium absorbed on solid carriers.			

RADIATION LEVEL LIMITS
(49 CFR 172.403 & 173.441)

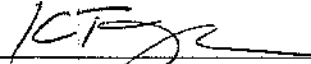

LABEL CATEGORY	TRANSPORTATION INDEX (TI)	RADIATION LIMITS
White	N/A	≤ 0.5
mR/hr		
Yellow II	≤ 1.0	≤ 50
mR/hr		
Yellow III	≤ 10	≤ 200
mR/hr		

PACKAGE RADIATION LEVEL LIMITS
(49 CFR 173.421(b), 173.422)

LIMITED QUANTITY = ≤ 0.5 mR/hr on any surface
INSTRUMENTS & ARTICLES = ≤ 0.5 mR/hr on any surface, (≤ 10 mR/hr at 4 inches from external surface of instrument)

REMOVABLE EXTERNAL PACKAGE CONTAMINATION LIMITS
(averaged over 300 cm²)
(49 CFR 173.443)

	$\mu\text{Ci}/\text{cm}^2$	DPM/cm ²
Beta-Gamma emitters, nuclides with half-life less than 10 days, U-Natural, Th-Natural, ²³⁵ U, ²³⁸ U, ²³² Th, ²²⁸ Th, and ²³⁰ Th in ores or physical concentrates.	10 ⁻⁵	22.0
All other Alpha emitters	10 ⁻⁶	2.2

Radioactive Material Movement Form				
1. Type: Shipment: <input checked="" type="checkbox"/> Receipt: <input type="checkbox"/>		2. TCN: R2086532707992AXX		
3. TO: PEARL HARBOR NAVAL SHIPYARD IMF 667 SAFEGUARD STREET BLDG 167-1 RECV 808-473-8000X4961 PEARL HARBOR HI 96860-5033		4. FROM: DLA DISTRIBUTION GUAM MARIANAS WHSE 9, BLDG 2118, SUMAY DRIVE SANTA RITA GU 96915-1000		
Commodity Description				
5. NSN: 6665001343483		6. NAME: ALARM GAMMA		
7. Quantity: 4	8. Condition Code: A		11. Physical Form: Solid <input checked="" type="checkbox"/> Liquid <input type="checkbox"/> Gas <input type="checkbox"/>	
9. Radionuclide(s): CS-137		12. Transportation Form: Special <input type="checkbox"/> Normal <input checked="" type="checkbox"/>		
10. Activity: Per Item: 29.6 KBQ (in SI Units) Per Item:		Total: 118.4 KBQ Total:	13. Transportation Index: 0.0	
Package Radiation Rate		Dry Wipe		LSC Wipe
14. Survey Meter Type/ Serial No: LDLM 19/218164		18. Lab Meter Type/Serial Number: L3030/272189		22. LSC Meter Type/Serial Number:
15. Date Calibration Due: 2014-05-17		19. Date Calibration Due: 2014-06-25		23. Date Calibration Due:
16. milliRem/hr: 0.008	17. microSv/hr: 0.08000	20. Alpha dpm/100cm ²	21. Beta dpm/100cm ² 17.3	24. LSC dpm/100cm ²
Shipment Information				
25. Excepted Notice: Proper shipping name				
1. Radioactive material, excepted package - articles manufactured from natural uranium or depleted uranium or natural Thorium, UN 2909				
<input checked="" type="checkbox"/> 2. Radioactive material, excepted package - limited quantity of material, UN 2910				
3. Radioactive material, excepted package - instruments or articles, UN 2911				
4. Radioactive material, Type A package, Special form, non fissile, UN 3332				
5. Non-regulated quantities of radioactive material. No UN required.				
26. Label Required: Excepted <input checked="" type="checkbox"/> White I <input type="checkbox"/> Yellow II <input type="checkbox"/> Yellow III <input type="checkbox"/> Non-regulated <input type="checkbox"/>				
Remarks and Special Precautions				
27.				
28. For additional information on these items call the RPO at 671-339-4160				
29. Certified By: KEVIN TOPASNA 			Date: 2013-10-24	
30. Surveyed By: STAN BLAU 			Date: 2013-10-24	

Kevin. TOPASNA, CTR @ DLA.MIL