EFCOG Review
DOE vs. DOT Surface Contamination Limits

Presented To

NNSS Waste Generator Workshop

On behalf of the EFCOG Contamination Limits Team

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Environmental Management
safety ❖ performance ❖ cleanup ❖ closure

EFCOG P & T Subgroup- Purpose

Established by EFCOG on November 2, 2011

- Leverage the P&T expertise and experience of contractor community to DOE
- Seek out and promote the best management and operating practices
- Focus on complex-wide integration and experience transfer

EFCOG P&T Subgroup Tasks

- Trailer Contamination Issue
- DOE vs. DOT Surface Contamination Limits-Application at DOE Sites
- GSA TransPort Integrator Pilot Study
- Type A Liquid Container Need
- Suspect Ratchet-Type Tie-Downs
- Radcalc Alternatives

DOE/DOT Contamination Limits Team

Purpose

Develop consistent application of the appropriate regulation for release of packages and commercial carrier equipment used for the non DOE or DOE contractor transportation of radioactive material at DOE complex sites

Team Members

Jim Portsmouth, CHPRC, **Lead**; Mike Waters, Cavanagh Services- **Co-Lead**; Syd Gordon, NSTec; Ashok Kapoor, EM-33; Joel Rabovsky, HS-11; Mark Ledoux, ES (*Chair of EFCOG RAP subgroup*); Kathleen Burianek, NA-174; Dan Shrum, ES-Clive; Don Wadsworth, New World Environmental; Andy Baumer, LANL; Scott Anderson, CH2M-WG Idaho; Jack Reust, OR Naval Program-ES; Danny Nichols, Fluor/B&W Portsmouth; and John McCoy, Fluor/B&W Portsmouth

Non-Fixed Contamination Limits Issue

DOE 10 CFR 835 is more conservative than the DOT 49 CFR and impacts offsite/onsite P&T operations significantly

- approximately 100 x for alpha
- approximately 22 x for beta-gamma

No public or worker health and safety issues under DOT or DOE limits

DOT Non-Fixed Contamination Limits
49 CFR 173.443 Table 9

Contaminant	Maximum Permissible Limits	Maximum Permissible Limits
	Bq/cm-2	dpm/CM-2
1. Beta and gamma emitters and low toxicity alpha emitters	4	220
2. All other alpha emitting radionuclides	0.4	22

Notes: DOT limits include 0.10 Wipe efficiency factor
49 CFR 174.715 - Cleanliness of vehicle – Rail mode
49 CFR 177.843 - Contamination of vehicle - Motor Carrier

DOT, DOE, and ANSI Surface Radioactivity Criteria

Isotope(s)	DOT-Removable[a] dpm/100 cm^2	DOE[d,e] dpm/100 cm^2	ANSI 13.12 dpm/100 cm^2
Transuranics, Ra-226, Ra-228, Th-228, Th-230, Pa-231, Ac-227,	240	100 TTL (20-removable[f])	600
Ra-223, Ra-224, U-232	**240**	**1000 TTL (200-removable[f])**	600 or 6000
Enriched Uranium[b]	**240**	**5000 TTL (1000-removable[f])**	6000
Th-228[c], Th-230[c], I-125, I-129	2400	100 TTL (20-removable[f])	6000 or 60,000
Th-232, Natural Th, Sr-90, I-126, I-131, I-133	2400	1000 TTL (200-removable[f])	6000 or 60,000
U-235, U-238, Natural U, Depleted U, **Beta-gamma emitters (nuclides with decay modes other than alpha emission or spontaneous fission) except Sr-90 and others noted above.**	**2400**	**5000 TTL (1000 - removable[f])**	6000, 60,000 or 6000,000
Tritium	**2400**	**10,000 TTL (all removable[f])**	600,000

a- Amount of radioactivity on a swipe (not adjusted for efficiency using the default factor of 10); **b**-Uranium containing a greater mass percentage of uranium-235 than 0.72%; **c-** when contained in ores or physical and chemical concentrates; **d-**Taken from Figure IV-1 of DOE Order 5400.5 *Protection of the Public and the Environment;* **e-**Per DOE Order 458.1 DOE may permit clearance of objects at higher levels; **f-**10CFR835 Appendix D contains the same values for removable surface radioactivity

DOE-STD-1098- Transportation of RAM

10 CFR 835 removable contamination values are more limiting than 49 CFR requirements and should be used as controlling limits for on-site and off-site transportation when using a conveyance that is owned by DOE or a DOE contractor [835.1(d)]. However, when a shipment is received from an off-site destination, by a non-DOE conveyance, the 49 CFR 173 transportation contamination values should be applied to all subsequent on-site transfers to the ultimate on-site destination.

10 CFR 835.1(b)(7) excludes radioactive material transportation not performed by DOE or DOE contractors from compliance with 10 CFR 835 regulations. However, radioactive material transportation (as defined in 10 CFR 835) does not include preparation of materials for shipment, packaging and labeling, or storage of material awaiting transportation for shipment. These activities shall be conducted in accordance with 10 CFR 835 [see 835.2(a), radioactive material transportation, and 835.1(b)] and should be conducted in accordance with this Standard.

Team - Approach

- Collection of data from Sites on Current Situation
  - Survey systems used in implementing dual contamination limits for onsite and offsite transportation
  - Decon activities and cost – above DOE limit and below DOT limit
  - Decon activities and cost – above DOT limits
  - Cost of implementing dual limits
  - Programmatic impacts
  - Contractual implications
- Evaluation of Data
- Development of EFCOG Recommendations

We need your help!

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THANK YOU!

EM Environmental Management

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HSS Office of Health, Safety and Security

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