



U.S. Department
of Transportation

**Pipeline and
Hazardous Materials Safety
Administration**

JUN 14 2005

400 Seventh Street, S.W.
Washington, D.C. 20590

Mr. Kurt Colborn
Director, Technical Services
MHF Logistical Solutions
800 Cranberry Woods Drive, Suite 450
Cranberry Township, PA 16066

Ref No. 05-0094

Dear Mr. Colborn:

This responds to your April 18, 2005, letter requesting clarification of the Hazardous Materials Regulations (HMR; 49 CFR Parts 171-180) applicable to Class 7 Radioactive Materials (RAM). Your questions are paraphrased and answered below:

- Q1. You ask whether the definition for "contamination" represents a limit on the combined total fixed and non-fixed radioactive contamination.
- A1. The answer is yes. As defined in § 173.403, contamination is the presence of radioactive substance on a surface in quantities in excess of 0.4 Bq/cm² for beta and gamma emitters and low toxicity alpha emitters or 0.4 Bq/cm² for all other alpha emitters. Contamination exists in two phases.
- Q2. You ask whether a default wiping efficiency of 0.10, or the actual wipe efficiency, may be used to convert the measurements to surface contamination levels when measuring non-fixed (removable) contamination transferred to a wipe.
- A2. The answer is yes. As specified in § 173.443(a)(1), a default wiping efficiency of 0.10, or the actual wipe efficiency, may be used to determine the level of non-fixed radioactive contamination.
- Q3. You ask whether the definition for "contamination" represents the lower limit of contamination, below which objects and empty containers are not subject to the radioactive material transport requirements of the HMR, provided radioactive contents are below at least one of the exemption values in the table found in § 173.436 or calculated by methods described in § 173.433.
- A3. The answer is yes. A non-radioactive object or empty non-radioactive container with radioactive contamination below the definition of "contamination" in § 173.403 are not subject to the radioactive material transport requirements of the HMR.



050094

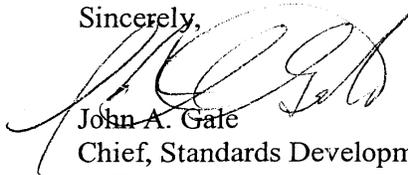
173.403
173.443

- Q4. You ask whether the definition for “contamination” represents the lower limit on contamination, above which contaminated items must be transported, at a minimum, as Surface Contaminated Objects (SCO).
- A4. The answer is yes. A non-radioactive object with an actual radioactive contamination equal to or greater than the definition of “radioactive material” as defined in § 173.403 must be regulated as a Class 7 (Radioactive) hazardous material.
- Q5. You ask whether the definition for “contamination” represents a lower limit of contamination for packagings that previously contained Class 7 radioactive materials and have been sufficiently cleaned in a manner that exempts them from marking and labeling requirements as specified in § 173.428.
- A5. The lower limit of the definition for “contamination” applies to packagings that previously contained Class 7 radioactive materials provided the packaging contains no volume radioactivity, any contamination on the inner surfaces is below the definition for “contamination” as specified in § 173.403, and all labels and markings associated with its use as a RAM packaging are removed.
- Q6. You ask whether empty containers that are contaminated above the limit specified in § 173.403 must be transported in accordance with § 173.428.
- A6. The answer is yes. Empty containers that are contaminated above the limit specified in § 173.403 must be transported in accordance with § 173.428 when the conditions cited in § 173.428 are met, even if the contamination is on the outside of the container. If the conditions of § 173.428 cannot be met, such a container must be shipped in accordance with the appropriate requirements for transporting Class 7 (radioactive) material.
- Q7. You ask whether the upper limit of permissible contamination on exposed surfaces of an empty packaging is determined in accordance with § 173.443.
- A7. Provided the empty packaging is transported in accordance with § 173.428, the upper limit of permissible contamination on exposed surfaces of an empty packaging is determined in accordance with § 173.443.
- Q8. You ask, when shipping a package of radioactive material, whether the contamination limits in § 173.443 apply, and whether the transportation requirements based on package contents take precedence over the definition of “contamination” found in § 173.403. You also ask whether such a package can be transported without additional and potentially conflicting markings for SCO.
- A8. The answer is yes. A package of Class 7 (radioactive) material may have exterior surface contamination up to the limits cited in § 173.443, which are higher than the numbers listed in the definition of “contamination” in § 173.403.

As defined in § 173.403, a Surface Contaminated Object (SCO) is a solid object which is not itself radioactive, but which has radioactive material distributed on its surface. Thus, any material which is defined as "radioactive material" as specified in § 173.403, or any package containing such radioactive material, cannot also be an SCO even if it has radioactive material on its surface.

I hope this information is helpful.

Sincerely,

A handwritten signature in black ink, appearing to read "J. A. Gale", is written over the typed name.

John A. Gale
Chief, Standards Development
Office of Hazardous Materials Standards



\$173.443

Foster
§173.403
Definitions
05-0094

800 Cranberry Woods Drive, Suite 450, Cranberry Township, PA 16066 T 724.772.9800 F 724.772.9850 W www.mhfls.com

Mr. Edward Mazzullo
Director of Hazmat Standards
USDOT/RSPA DHM-10 Suite 8422
400 7th Street, SW
Washington, DC 20590-3012

April 18, 2005

SUBJECT: Interpretation for the Contamination Definition of 49 CFR 173.403

Dear Mr. Mazzullo,

The purpose of this letter is to request confirmation of our interpretation of the requirements of the definition of "contamination" in 49 CFR 173.403. Please confirm or clarify our understanding of the definition and its impacts on other aspects of 49 CFR 173. We'd appreciate an item-by-item interpretation of the following specific issues associated with the definition:

Measurement:

1. The 49 CFR 173.403 definition limits [0.4 Bq/cm² for beta, gamma, and low-toxicity alpha emitters, and 0.04 Bq/cm² for other alpha emitters] represent a limit on the *total* fixed and non-fixed radioactive contamination *combined*.
2. The contamination definitions of 49 CFR 173.403 apply to contamination *on a surface*. Hence, when measuring non-fixed contamination transferred to a wipe, a default wiping efficiency of 0.10, or the actual wipe efficiency, may be used to convert the wipe measurements to surface contamination levels {as described in 49 CFR 173.443(a)(1)}.

Shipping Impact:

3. The definition represents the lower limit on contamination, below which objects and empty containers are not subject to Class 7 hazardous materials transportation regulations, so long as any radioactive contents are below at least one of the exemption values in the table of 49 CFR 173.436.
4. The definition represents the lower limit on contamination, above which contaminated items must be transported at least as Surface Contaminated Objects (SCO).

5. When applied to containers that formerly contained Class 7 materials, the definition represents a lower limit on contamination, below which containers are considered sufficiently clean so as to be exempt from the marking and labeling requirements for empty containers in 49 CFR 173.428.
6. Empty containers that are contaminated above the 173.403 limit must be shipped empty in accordance with 49 CFR 173.428.
7. The upper limit on permissible contamination on exposed surfaces of an empty container is determined in accordance with 173.443.
8. When shipping a package of radioactive material, the contamination limits of 49 CFR 173.443 apply, and transportation requirements based on the package contents take precedence over the contamination definition of 173.403. That is to say that a shipment of radioactive material that complies with 173.443, and is marked and labeled appropriate to its contents, can be transported without additional and potentially conflicting markings for SCO (SCO markings could be seen as necessary if content-required transportation doesn't take precedence over the contamination definition of 173.403).

Please feel free to contact me at (724) 772-9800, ext. 5560 if you have any questions about this request. Thank you for your assistance.

Respectfully submitted,



Kurt Colborn
Director, Technical Services
MHF Logistical Solutions