



U.S. Department  
of Transportation

**Pipeline and Hazardous  
Materials Safety  
Administration**

1200 New Jersey Avenue, SE  
Washington, D.C. 20590

**SEP 10 2008**

Mr. Garrett Turner  
Hazardous Waste Information Specialist  
Local Hazardous Waste Management Program in King County  
Public Health, Seattle & King County  
401 Fifth Avenue, Suite 1100  
Seattle, WA 98104-1818

Ref. No.: 08-0144

Dear Mr. Turner:

This is in response to your May 22, 2008 letter requesting clarification of the Hazardous Materials Regulations (HMR; 49 CFR Parts 171-180) regarding the applicability of the HMR to a household smoke detector. Specifically, you ask whether a household smoke detector, containing Americium 241, can be shipped as a non-hazardous material if it meets the provisions of § 173.424(d). You state that the household smoke detector produces less than 0.1 mSv/hour (10 mrem/hour) from any point of its external surface.

The answer is no. A household smoke detector as described above would be regulated as Class 7 (radioactive) material. Section 173.424(d) states, in part, that a radioactive instrument or article and its packaging is excepted from the specification packaging, shipping paper and certification, marking and labeling (except for the UN identification number marking requirement described in § 173.422(a)) requirements if:

The radiation level at 10 cm (4 in) from any point on the external surface of any unpackaged instrument or article does not exceed 0.1 mSv/hour (10mrem/hour).

In accordance with § 173.424(i) the package must be otherwise prepared for shipment as specified in § 173.422 and must comply with all the provisions of § 173.424 when transported in commerce.

However, if your smoke detector containing Americium 241 does not meet the definition of a radioactive material and does not meet the definition of any other hazard class as defined in the HMR it would be considered non-hazardous.

I hope this information is helpful. If you have further questions, please do not hesitate to contact this office.

Sincerely,

A handwritten signature in black ink that reads "Charles E. Betts". The signature is written in a cursive style with a large, looping initial "C".

Charles E. Betts  
Senior Transportation Regulations Specialist  
Office Hazardous Materials Standards

**Environmental Health Services Division**

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**Public Health**   
Seattle & King County

Satterthwaite  
§ 173.424  
RAM  
08-0144

May 22, 2008

Dear Sir / Madam:

I am seeking your expert opinion regarding the transportation of household smoke detectors that contain Americium 241. According to a representative of the DOH these smoke detectors produce less than 0.1 mSv/hour from any point its external surface (see corresponding email). I believe that according to **49 CFR 173.424 D** that if a radioactive item produces less than that amount (and is not otherwise classified as a hazardous waste) it is exempt from DOT hazardous waste packaging, labeling, and marking regulations. Can this item be shipped as though it were a regular non-hazardous waste?

Sincerely, (

Garrett Turner  
Hazardous Waste Information Specialist  
Local Hazardous Waste Management Program in King County  
Public Health, Seattle & King County.

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**From:** Scroggs, Arden (DOH) [mailto:Arden.Scroggs@DOH.WA.GOV]  
**Sent:** Wednesday, May 21, 2008 11:32 AM  
**To:** Turner, Garrett  
**Subject:** RE: Americium 241 smoke detector question

Garrett,

So your questions are: Do americium-241 smoke detectors have a radiation level at or exceeding .1 mSv/hour from any point its external surface?

No. the amount of Am 241 in the detector is minute. it would take thousands of times the amount in your general smoke detector to measure that high a does-rate.

and: If smoke detectors are below this level and therefore are excepted from hazardous waste shipping requirements, then it stands to reason that the following paragraph does not apply.

Yes. excepted means whatever rules an item is excepted from don't apply for the item. therefore I can tell you the radiation control rules don't apply for them but a DOT expert would have to confirm that DOT rules don't apply if you wish to be certain they don't. It is my opinion that smoke detectors are excepted from them.

so now, we advise that household smoke detectors go, intact, to the regular land fill. could that be an option for this issue?

thank you for your interest in the control of household smoke detectors.

Arden C. Scroggs, Supervisor  
Radioactive Materials Section  
ORP, DEH, DOH  
Washington State  
voice - 360.236.3221  
fax - 360.236.2255  
Public Health - Always working for a safer and healthier Washington

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**From:** Turner, Garrett [mailto:Garrett.Turner@kingcounty.gov]  
**Sent:** Wednesday, May 21, 2008 9:35 AM  
**To:** Scroggs, Arden (DOH)  
**Subject:** Americium 241 smoke detector question

Dear Arden Scroggs,

Recently some colleagues have questioned the viability of mailing a smoke detector containing americium-241 back to the manufacturer. While I understand that your office cannot respond on behalf of the postal service, I had some questions regarding the hazards associated with the amount of americium 241 found in household smoke detectors. According to 49 CFR 173.424

**" § 173.424 Excepted packages for radioactive instruments and articles.**

A radioactive instrument or article and its packaging are excepted from requirements in this subchapter for specification packaging, labeling, marking (except for the UN identification number

marking requirement described in § 173.422(a)), and if not a hazardous substance or hazardous waste, shipping papers and the requirements of this subpart if:"

"(d) The radiation level at 10 cm (4 in) from any point on the external surface of any unpackaged instrument or article does not exceed 0.1 mSv/hour (10 mrem/hour);"

Do americium-241 smoke detectors have a radiation level at or exceeding .1 mSv/hour from any point its external surface? If smoke detectors are below this level and therefore are excepted from hazardous waste shipping requirements, then it stands to reason that the following paragraph does not apply.

**"10.7 Warning Labels for Hazardous Materials**

With few exceptions as noted in these standards, most hazardous materials acceptable for mailing fall within the Other Regulated Materials (ORM-D) regulations of CFR 49 173.144, which do not require DOT hazard class warning labels. Except for Division 6.2 materials under 10.17.4 and dry ice under 10.20.4, any hazardous material bearing or required to bear a DOT hazard class warning label under the requirements in 49 CFR is prohibited from mailing. Mailable ORM-D material must be marked as required in 10.8. Mailable hazardous material must bear DOT handling labels (e.g., orientation arrows, magnetized materials) when applicable."

Sincerely,

Garrett Turner  
Hazardous Waste Information Specialist  
Local Hazardous Waste Management Program in King County  
Public Health, Seattle & King County.

ect: FW: Americium 241 smoke detector question