U.S. Department
of Transportation

**Pipeline and
Hazardous Materials Safety
Administration**

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

SEP 29 2006

Mr. Stan Hodges
Senior Project Manager
Nukem Corporation
3800 Fernandina Road Suite 200
Columbia, SC 29210

Ref. No. 06-0189

Dear Mr. Hodges:

This is in response to your August 15, 2006 letter requesting clarification regarding the applicability of the Hazardous Materials Regulations (HMR; 49 CFR Parts 171-180) to HEPA vents. Your question pertains to § 173.412(f) which requires the containment system to retain its radioactive contents under the reduction of ambient pressure to 25 kPa (3.6 psi). Specifically, you ask if a passive HEPA vent may be installed in a Type A package to meet the pressure requirement in § 173.412(f) as long as the resultant containment system would not release any radioactivity to the environment.

The HMR do not prohibit the use of vents in Type A packagings containing Class 7 (radioactive) materials. However, the packaging must be an authorized packaging for the Class 7 (radioactive) material under the HMR, meet the HMR design specification (if applicable), and comply with the general packaging requirements in Part 173, Subpart B. The Type A packaging, with the vent, must meet the design and construction requirements in § 178.350, which also requires compliance with §§ 173.403, 173.410, 173.412, 173.415, 173.465 and 173.466.

I hope this information is helpful.

Sincerely,

Hattie L. Mitchell

Hattie L. Mitchell, Chief
Regulatory Review and Reinvention
Office of Hazardous Materials Standards

060189

173.412(f)

Satterthwaite
§173.412
Packages
06-0189

Drakeford, Carolyn <PHMSA>

From: Williams, James <PHMSA>
Sent: Tuesday, August 15, 2006 3:11 PM
To: Drakeford, Carolyn <PHMSA>
Subject: FW: 49 CFR 173.412 (f)
Attachments: 49 CFR 173.412(f).xls

Second Interpretation Request

Jim Williams
-----Original Message-----
From: Stan Hodges [mailto:shodges@nukem.com]
Sent: Tuesday, August 15, 2006 8:08 AM
To: Williams, James <PHMSA>
Cc: Richard Byars; Nate Patterson
Subject: FW: 49 CFR 173.412 (f)

Did you ever get a response to the question that I have underlined below? I suppose the question is - "Can passive HEPA vents be installed in Type A packages as long as the resultant package would not release any radioactivity to the environment. This passive HEPA vent would certainly help to resolve any issue associated with meeting 173.412(g) since the passive vent would allow the pressure both inside and outside of the package to equalize.

Stan Hodges
Sr Project Manager
(O) 803-214-5848
(M) 803-318-7493
(F) 803-214-5804

From: Stan Hodges
Sent: Tuesday, July 25, 2006 6:21 PM
To: 'James.Williams@dot.gov'
Subject: RE: 49 CFR 173.412 (f)

After taking another look at it, I believe you are correct. I put together a spreadsheet comparing atmospheric pressures with various elevations and comparing these elevations with both DOT's regulation (49 CFR 173.412(f) and IAEA paragraph 643). My recommendation is to adopt the reduction in atmospheric pressure to 60 kPa (vs. a reduction to 25 kPa) has a sounder technical argument. Take a look and see what you think from my argument on the attached spreadsheet.

Also, as another quick question - Is there anything in the regulations that allows you to utilize passive vents (i.e.

HEPA vents) in packages (i.e. Type A or IP-2 packages)? I did a quick search and could not find where this topic was addressed. As you know, freight containers can be utilized as IP-2 packages if they meet certain conditions delineated in 173.411 and they typically have two vents installed on the package. We actual y typically go a step further and apply HEPA vents in place of these open vent pathways.

Stan Hodges
Sr Project Manager
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From: James.Williams@dot.gov [mailto:James.Williams@dot.gov]
Sent: Tuesday, July 25, 2006 2:24 PM
To: Stan Hodges
Subject: RE: 49 CFR 173.412 (f)

I read this as they agree with me - an ambient pressure drop from 14.7 to 3.6, which would result in an internal pressure of 11.1 psi.

Jim Williams
Radioactive Materials Branch, PHH-23
Office of Hazardous Materials Technology, Room 8430
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> -----Original Message-----
> **From:** Stan Hodges [mailto:shodges@rwe.nukem.com]
> **Sent:** Tuesday, July 25, 2006 2:08 PM
> **To:** Williams, James <PHMSA>
> **Subject:** FW: 49 CFR 173.412 (f)
>
> Jim:
>
> I have highlighted the document in the below e-mail message relative to where I found the notation from ORNL relative to an internal pressure of 3.6 psi. Please note that I only skimmed the letter from ORNL to the USNRC. I will take a look at the document link that you sent to me and get back to you. I left a message for Fred to call me back.
>
> Stan Hodges

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From: Stan Hodges
Sent: Tuesday, July 25, 2006 12:13 PM
To: Richard Byars
Subject: 49 CFR 173.412 (f)

Richard:

In a text (Document No. ORNL/NRC/LTR - 02/12 - http://www.ornl.gov/~webworks/cppr/y2001/rpt/113628.pdf) prepared by ORNL for the USNRC, they address the design condition delineated in the subject regulatory section. They note in the text: "The most significant of the design conditions are the reduction of ambient pressure to 3.6 psi (i.e., internal pressure of 11.1 psi) and a 1-ft drop of the package onto a flat horizontal surface."

Based on this statement, I believe they are essentially saying that the container cannot release any radioactivity in a vacuum condition of 3.6 psi (equivalent to 7.33 inHg).

I have a call into Jim Williams with the DOT (Rick Boyle is out this week) and will talk to him about this issue and whether or not a HEPA vent would be acceptable in a Type A package. I also want to talk to him about the Type B ( ) cask shipping scenarios.

Pls note that the drop test height is dependent on the weight of the package with contents and is delineated in a separate subsection of the regulation.

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