

## Parker, Bryan

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**From:** Marc Weichelt <mweichelt@centurytel.net>  
**Sent:** Wednesday, December 17, 2014 4:44 PM  
**To:** Parker, Bryan  
**Subject:** RE: NRC Info request  
**Attachments:** scan.pdf

Bryan,

The signed pdf is attached.

Marc

**From:** Parker, Bryan [mailto:Bryan.Parker@nrc.gov]  
**Sent:** Wednesday, December 17, 2014 4:27 PM  
**To:** 'mweichelt@midamericaisotopes.com'  
**Subject:** NRC Info request

Hey Mark,

Here's my e-mail as promised. Hopefully, this will work. If not, we'll do by fax tomorrow.

Thanks.  
Bryan

*Bryan A. Parker*

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 **U.S.NRC**  
U. S. Nuclear Regulatory Commission  
*Protecting People and the Environment*

**Marc Weichelt**

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**From:** Marc Weichelt [mweichelt@midamericaisotopes.com]  
**Sent:** Thursday, December 11, 2014 9:22 AM  
**To:** 'Parker, Bryan'  
**Subject:** RE: NRC Request for Additional Info

Bryan,

We are in agreement with items 1 and 2.

In response to item 3. All testing has met or exceeded the USP requirement for sodium pertechnetate; less than 0.15 uCi Mo-99 / mCi Tc-99m. Using this as an upper boundary, there could be as much as 2.85 mCi Mo-99 in a 19 Ci generator. For the more common 7.5 Ci generator, you could have as much as 1.125 mCi Mo-99 in a single sample. Having said that, most samples come back at or below the limit of detection for Mo-99. Therefore I think it highly unlikely that I will exceed the limits asked for in this amendment.

I made a second request of Northstar for information regarding item 4. The information provided is as follows:

FROM NORTHSTAR:

These are the impurity levels as they relate to Mo-99 activity. For natural Mo we could get as high as 7-8 Ci generators. Therefore, just multiply by 8 for the max impurity. We already know that the vast majority of the Zr and Nb are removed during MURR processing. The Cs will stay in solution and follow the source material (not end up in product). Sb is the only one that may end up in the product, and thus far I've tested a 20 Ci source of Tc-99m product and have found no trace of any of these potential impurities. I have calculated the potential maximum based on an 8 Ci generator. //

Sb122:  $1.62e-4 \text{ Ci} / \text{Ci Mo99} \times 8 = 1.3 \text{ mCi}$   
Sb124:  $8.1e-6 \text{ Ci} / \text{Ci Mo99} \times 8 = .065 \text{ mCi}$   
Zr95:  $1.3e-6 \text{ Ci} / \text{Ci Mo99} \times 8 = .01 \text{ mCi}$   
Nb95  $1.3e-6 \text{ Ci} / \text{Ci Mo99} \times 8 = .01 \text{ mCi}$   
Nb92m:  $4.7e-6 \text{ Ci} / \text{Ci Mo99} \times 8 = .037 \text{ mCi}$   
Cs134:  $1.1e-6 \text{ Ci} / \text{Ci Mo99} \times 8 = .009 \text{ mCi}$

Please advise as to how you want to handle item 4 for these amounts of potential impurities.

Best regards,

Marc  12/17/14

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