Joint Committee on Public Drinking Water Equipment Performance
Teleconference Meeting Summary

September 3, 2014

Meeting Participants

Bob Powitz, Chair (R. W. Powitz & Assoc.); Cyndi Benson (Harmsco Filtration Products); Michael Finn (USEPA); Peachie Hytowitz (Amiad Water Systems); Tim McCandless (AWWA); Eva Nieminski (Utah Dept. of Environmental Quality); Frank Niles (Massachusetts Dept. of Health); Bruce Bartley, Mike Blumenstein, Dave Purkiss and Monica Leslie (NSF)

Discussion

B. Powitz welcomed everyone and called the meeting to order. M. Leslie took attendance and read the anti-trust statement. It was noted that a quorum had been reached.

The purpose of the meeting was to review the comments received from straw ballot NSF 419: Public Drinking Water Equipment Performance- Membrane and Cartridge Filtration (419i1r2) and to reach a consensus on the recommended revisions to the draft standard. B. Bartley led the discussion on the comments received. He reminded the group that this is a living document and it will be reassessed on a regular basis to make sure that we are getting the most public health benefit for the cost of certification to the standard. B. Powitz stated his agreement and reiterated that the standard can be improved at anytime. He noted that the Council of Public Health Consultants will also be reviewing the standard specifically from the perspective of the public health impact.

Section 2 – Normative References

Comments were received from J. Mendez and T. McCandless to retain the reference to the EPA MFGM. M. Leslie referred to the group’s discussion at the 2103 meeting on not referencing uncontrolled documents such as the EPA MFGM, but rather to include the actual sections or criteria needed directly in the standard. The concern was raised that the EPA guidance manual is not likely to be reviewed and updated on a regular basis. It was suggested that credit to this document could be included in the introductory foreword that will be included in the standard. There was general agreement among the group that this would be appropriate. B. Powitz also suggested that an informational annex could include a bibliography to these types of references, rather than have them listed as normative requirements under section 2. Another option would be to include the actual guidance manual as a reference document in an annex to make it more accessible to the consumer. T. McCandless stated that as long as it is referenced somewhere in the standard, that would be acceptable to him.

Section 5 – Bag and cartridge filter systems

J. Mendez and C. Benson submitted comments that an informational annex be included in the standard. This annex should contain a summary of the validation testing done by NSF to justify
microspheres as surrogates for oocysts, and the rationale for the selection of the clogging particulate criteria in the DWTU standards. It was noted that this was discussed at the 2013 JC meeting, and has now been included in the latest draft of NSF 419 (Annex E in revision 3) and has been uploaded to the group’s online workspace for review.

The group discussed a comment submitted by T. McCandless on section 5.3.1, which describes the challenge particulate using microspheres instead of microorganisms. Clarification was made that this is only for bag and cartridge filters. Membranes are addressed separately under section 6. B. Bartley referred to the presentation made by R. Herman at the 2013 JC meeting and the data now provided in Annex E as justification for using this approach for testing these filters.

A comment was submitted by J. Mendez to keep the previous section 5.3.2 that was removed, because it was a requirement of the LT2ESWTR (40 CFR 141.719(a)(4). The group was unsure of what this was referencing and B. Bartley and M. Leslie stated that they would follow up with J. Mendez on this.

M. Finn commented that the sentence regarding the direct integrity test under section 5.4 should be removed. This will be removed, as it is incorrectly referring to membranes, and was inadvertently left in the paragraph. B. Bartley suggested that in the future the JC may want to consider including a challenge test at its terminal head loss, as a way to confirm the integrity of the bags and cartridges. M. Finn agreed that it would be valuable. B. Bartley and M. Blumenstein will draft some proposed language for this for the group to review.

The group discussed J. Mendez’s comments on the use of test dust under section 5.6.2. B. Bartley stated the LT2 can be referenced to specify the use of test dust. He explained that the laboratory test water is very clean. It would take a long time to reach terminal head loss. B. Bartley stated that he is uncertain where the 10 NTU value came from, but he will check with the NSF lab. M. Blumenstein stated that 30 NTU is the minimum value for microbiological purifiers, and clogs the filters very fast. 10 NTU is still pretty clean. It was clarified that the draft standard is currently specifying a minimum of 10 NTU. B. Bartley reiterated that you still need to clog the filter up and form a cake layer in order to achieve terminal head loss. Whether you achieve this slowly or quickly, with a higher or lower turbidity will not make a difference. B. Bartley will follow up with J. Mendez to clarify this. C. Benson noted that NSF/ANSI 53 specifies a minimum of 10 NTU as well, and this is probably where the requirement came from.

The group discussed J. Mendez’s recommendation for specifying disinfection and flushing of the units (e.g., AWWA C653). B. Bartley reminded the group that running a negative control is required to ensure that the disinfection practices work, but perhaps it is not clear as currently written. B. Bartley asked the group if confirmation of disinfection should be specified. It was agreed that some additional language should be added to 5.7.1 referencing the annex that describes use of negative control samples to confirm disinfection. With regards to 5.7.2, flushing instructions need to be included for testing. B. Bartley stated his opinion that it is not likely that a manufacturer would not have them, but perhaps this needs to be made clear. Minimum criteria could also be specified in the rare case that flushing instructions aren’t provided, such as flushing with a minimum of 3 hold-up volumes.

J. Mendez submitted a comment suggesting that negative control be defined under section 5.8. B. Bartley agreed that this could be added.

The group discussed J. Mendez’s comment that the results should be included in the LRV calculations. B. Bartley stated his agreement and reported that NSF typically uses the worst case
LRV in reporting the log reduction value in membranes. He believes that would be the case for bag and cartridges as well. B. Bartley will add language in Annex C to better define the establishment of the log removal value. He will also add proposed LRV calculations for an example in the annex.

T. McCandless also had a comment under section 5.8 that bag and cartridges should only refer to microspheres, not organisms. The group agreed.

For section 5.10, a reference will be made to Annex C, and Annex C will be updated to specify that the report for bags and cartridges shall include the information recommended by J. Mendez (e.g., description of bag/cartridge, maximum flow, terminal pressure during test, etc.)

Section 6 – Microfiltration and ultrafiltration membrane modules

B. Bartley stated he needed more clarity on the question raised by J. Mendez on whether the volume of pressurized air in the module during direct integrity testing should be known to calculate the sensitivity of DIT. He will follow up with him directly on this.

B. Bartley agreed to add hollow fiber diameter (inside and outside), thickness, and length to Table 2 under section 6.1.1.

B. Bartley will follow up with J. Mendez on his comment to specify equipment that assures proper mixing of the stock solution under section 6.3. B. Bartley noted that there are a couple of different ways to mix the stock solution (e.g., via individual tank or inline mixing prior to unit being tested). There was uncertainty as to how much detail should be included. This may be something that should be left up to the testing lab. At a minimum, reference could be made to the EPA MFGM for examples.

The group discussed the comment from J. Mendez on adding details from the EPA MFGM on conducting a clean water flux test. B. Bartley stated that we already check the flow rate and the transmembrane pressure before and after the test. We could specify a standard error between the before and after data be checked (e.g., 5%). F. Niles suggested that the recovery also be included in this. B. Bartley agreed. M. Blumenstein noted that section 6.3.3 in the EPA MFGM is referring to pilot testing. In this case, we are starting with a clean water supply to begin with (dechlorinated, potable water supply as specified in section 6.5), and the only water going through the unit beforehand is what is recommended for flushing. He stated that the clean water flux test may not be necessary. There was general agreement among the group.

The group discussed the comment from T. McCandless on the turbidity specification of <0.3 NTU under section 6.5. It was clarified that only endospores are added in this challenge. After further discussion, T. McCandless and the rest of the group agreed to leave this as written.

Also under section 6.5, B. Bartley stated that language will be added to define the test organism viability and stability evaluation. He suggested to take guidelines specified the EPA’s Guidance Manual on UV and make it pertinent to membranes and filters. The requirement will be ± 0.2 log. There was no objection from the group.

It was noted that under section 6.7, the NDPT should be conducted after the performance testing is completed and that it must be consistent with the 3 µm resolution as specified in the EPA MFGM. B. Bartley agreed to add language to section 6.7 regarding confirmation of the 3 µm
resolution when the NDPT is done. In addition, a requirement will be added to Annex C to report how the final QCRV is calculated per J. Mendez’s suggestion.

B. Powitz suggested that a smaller sub-group of members review the terms used in NSF 419 and NSF/ANSI 330: *Glossary of Drinking Water Treatment Unit Terminology*, and see if there are any terms that still need to be defined.

For section 6.9.4, the terms “negative controls” and “positive controls” will be defined per J. Mendez’s suggestion.

B. Bartley stated that he will follow up with J. Mendez regarding collecting samples versus analysis being done in triplicate.

Annex C- Data Management, Analysis, and Reporting

The group discussed the additional comments regarding Annex C. How much detail does the JC want to require versus what should be left up to the certifiers? There was no additional feedback from the group. It was reiterated that the additions discussed earlier will be added to the annex.

Additional Comments

The group discussed the title of the proposed standard. P. Hytowitz suggested that the title reflect filtration devices in general so that alternative technology can be considered in the future. B. Bartley noted that the JC had agreed to address RO systems, for example. There was general agreement among the group. The purpose under section 1 will also be changed to be more generic, but the scope will remain more specific as to what is presently covered. B. Powitz also suggested adding to the foreword a statement that it is anticipated that RO systems will be addressed in the standard in the future. B. Bartley will draft some proposed language for the foreword.

P. Hytowitz suggested adding a reference to NSF/ANSI 372 under section 4 – materials, and the normative references under section 2.

F. Niles submitted a comment recommending that the microspheres specify a mixture of size ranges from 2-5 µm. After further discussion it was agreed that the committee should review the proposed Annex E and the 2013 JC meeting presentation, and then reaffirm or change their decision on the proposed 3 µm microsphere requirement. B. Bartley noted that the maximum removal you can get is 2.5 log reduction for bag/cartridges. M. Blumenstein reported that he recently reviewed the data of all of the point-of-use devices that NSF tested for cyst reduction under NSF/ANSI 53 from 2002-2012. He calculated the pass/fail rate for every contaminant. The pass/fail rate for live cysts compared to the 3 µm microspheres is identical (54%). This included over 100 tests for the microspheres and over 200 tests for the live cysts. B. Bartley stated that he would also like to share with the committee some additional references on peer-reviewed articles on using the 3 µm microspheres. M. Leslie stated that she would send out a straw ballot to pose this question to the JC. A follow-up teleconference can be scheduled for further discussion if necessary.

F. Niles submitted the comment that the manganese requirement under the test water specifications should be revised from < 0.5 ml/L to <0.3 mg/L in accordance to EPA’s recent Health Advisory. This will be revised.
The group discussed M. Finn’s comment to clarify that either B. atrophaeus or MS-2 could be used as a surrogate in the challenge testing under section 6.

The meeting was adjourned.

**Action Items**

1. M. Leslie and B. Bartley will update draft standard NSF 419 (revision 3) with the proposed changes discussed above.
2. B. Bartley will follow up with J. Mendez for clarification on his comments as noted above.
3. B. Bartley will distribute additional peer-reviewed studies on the use of 3 µm microspheres.
4. M. Leslie will submit a straw ballot to the JC on the proposal to specify microspheres with a size of 3 µm versus a range of 2-5 µm.