Participants

France Lemieux, co-chair (Health Canada); Mike Schock, co-chair (US EPA); George De Jarlais (Badger Meter); Bob Weed (Copper Dev. Association.); Kristin Licko and Stacy Ott (WQA); Katie Foster, Pete Greiner, and Amanda Zeoli (NSF)

Discussion

A. Zeoli took attendance and read the antitrust statement. F. Lemieux reviewed the roster and noted that Donald Reid and David Heumann were no longer a part of the TG. She will put out a call for members at the JC meeting, and follow up with Rick Sakaji to confirm participation, as he has recently retired. K. Licko was changed from an Observer to a Member.

F. Lemieux reviewed the 2018 meeting summary and stated that if there are any additions or corrections, to please let M. Leslie know.

Purpose

The purpose of this task group is to look at extraction waters to determine if we need to make changes to the test waters and to evaluate exposure chemistries across the standard. This TG was originally set up as a subtask group of the lead task group. There were a variety of subjects open to the group that weren’t originally deemed high priority at the time, but it might be a good idea to go back and look at those other items. New issues are regularly coming up that may take priority.

One of the issues previously addressed by this task group was creation of Annex H. Criterion for both copper and galvanized pipe were added as technical guidance already existed which could be used as the basis for the annex criteria. At this point however, the annex needs to be updated to identify the minimum criteria to be reviewed prior to adding new materials just as Annex C has requirements prior to adding new materials there. It had been suggested that separate task group be formed to develop those criteria should probably have a different task group to manage it, and it should be modeled after Annex C (Acceptable Materials). Plastics and stainless steel may be considered along with copper pipe. There are some papers that suggest that some plastics of these materials may not be appropriate in certain water chemistries. For materials that are not currently addressed in Annex H, if someone applies, who is going to look at the studies? Who will review the submittals? Annex H currently only has copper and galvanized metals because there was already a lot of data and recommendations available. There are some papers that suggest that some plastics may not be appropriate in certain water chemistries. We’re looking at criteria to see if the material is appropriate. While ultimately the NSF61 JC will need to vote on any additions to Annex H, they may review a task group review the submission first.

Using pH 5 test water to test bronze/brass materials
An implementation period for switching the exposure water requirements to those specified in Table We have established transition requirements from B3a to those specified in B3b has been set in the standard, and certifiers are to continue to monitor and update the joint committee on the impacts of the change.

Pete Greiner reminded the task group of data previously presented by NSF demonstrating that pH 5 exposure water was the worst-case for evaluation of copper from brass/bronze, although this is not currently required under Table B3b. During this previous discussion, additional questions were raised regarding the normalization assumptions used for in-line devices as well as the appropriateness of testing products with brass/bronze surfaces at pH 5. What is the appropriateness of testing brass/bronze metals surfaces at pH 5? To address the former question, Pete Greiner demonstrated that as the inside diameters of cylinders and spheres increase, the interior surface area-to-volume (SA/V) ratios decrease. However, NSF 61 requires that all inline devices with static volumes of less than 1 L be evaluated to 1 L, which means that for in-line devices evaluated under NSF 61, as inside diameter increase, SA/V ratios also do the opposite (they increase), until unit volumes reach 1 L, at which point the SA/V ratio decreases. When the N3 factor of 0.33 is included in the calculation, this same effect is observed, with effective SA/V ratios simply reduced to 1/3 of their calculated SA/V. A similar trend occurs with Section 9 devices, which are also evaluated with to a static volume of at least 1 L. For inline devices, the device holding the closest to 1 L is generally the worst-case test rep. For section 9 devices, the device with the greatest total SA is typically the test rep (assuming all devices hold less than 1 L).

In previous discussions, it was suggested to remove the 1 L field volume assumption from the standard. But Pete demonstrated that if this requirement were removed and the actual static volume of the device were used, it would result in the evaluation of the product family even more aggressive than is currently the case, with the smallest units having very high calculated SA/V ratios. Pete and Katie Foster concluded that there wasn’t an easy way to change inline device normalization in a way to make it less conservative for those 3-3.5” devices that are often the test rep when evaluated under the current standard requirements. The TG looked at data for surface area-to-volume of common shapes (cylinders and spheres) and the following information was noted:

SAVs decrease as inside diameter increases

If cylinders are treated as in line devices, SAVs increase as inside diameter increases until unit volumes reach 1 L

This happens due to the minimum V_{static} assumption of 1 L.
When including the effect of the N3 factor (0.33), the effective result is reduced by 1/3.

We see a similar trend with Section 9 devices.

Device manufacturers worked with the Stevens Institute to determine this data

SAV of cylinder as if inline device results:

Device holding closest to 1 L is generally the test rep

With N3, assumes 1/3 consumed

In-line device results are held to TAC

General relationship of Section 9 device results:

Device with greatest SA is the test rep (assuming all less than 1L)

With no N3, assumes 100% consumed

Section 9 device results are held to SPAC

The group then Is a remedy needed? If yes, how should we proceed? If it’s recommended that the underlying reason for the trend is removed from the standard (aka if unit volume ≤1 L, then assign 1L), then the evaluated SAV of the product family increases, making the evaluation even more aggressive. What do we do about copper in the pH 5 water? discussed what to do about the question of whether to test copper at pH 5 in brass/bronze materials.

Do we just not expose brass/bronze to the pH 5 water? If we do, It was noted that there are some product things like meters that have a lot of brass, and the pH 5 water shows high amounts of copper leaching from these devices. G. De Jarlais noted for his water meters
when tested under pH 5, copper extraction results were consistently reaching 70 to 80% of under the TACSPAC.

With the pH 8 water, the numbers were inconsistent. F. Lemieux stated that there are a lot of territories in Canada where the pH 5 water is prevalent, especially private wells and some ground water supplies, and that it would be harder to limit the installation of brass devices in areas with these water chemistries as is done for copper plumbing systems, given the prevalence of brass containing devices. Mike Schock agreed with this comment.

Action Items

1. F. Lemieux will follow up with Rick Sakaji regarding membership.
2. The discussion on in-line device normalization will be struck from the 2019 joint committee agenda.

2-3. Another conference call will be scheduled towards the end of the first quarter to discuss the question of testing brass/bronze materials with pH 5 test waters, with a second call to likely be held, and then another before in quarter 3 prior to the 2020 next year’s JC meeting.