Joint Committee on Drinking Water Treatment Units
Meeting Summary
NSF International, Ann Arbor, Michigan
May 8, 2019

I Opening Remarks

Joint Committee (JC) Chairperson Bob Powitz welcomed everyone and called the meeting to order. M. Leslie took attendance of those voting members participating via phone and read the antitrust statement. B. Powitz announced the addition of three new members: Joe Wolff (Elkay), Darren Lytle (USEPA), and Zac Gleason (WQA). The current membership stands at 11 industry members, 9 public health/regulatory members, and 10 users. M. Leslie stated that due to the requirement for balance, the committee is seeking additional members in the public health and user categories. However, applications from industry representatives will be accepted at any time and it will be kept on file for consideration when an opening becomes available.

II Review of Agenda

Motion: The May 2019 agenda is acceptable as written. F. Brigano motioned to accept the proposed agenda; A. Fenwick seconded.

Vote: All in favor.

Motion passed.

III Review of 2018 Meeting Summary

Motion: B. Powitz asked if there were any additions or corrections to the May 2018 Joint Committee on Drinking Water Treatment Units meeting summary. M. Leslie noted that there was one minor correction previously noted and that is reflected in the current version. S. Ver Strat moved to accept the meeting summary as written; F. Brigano seconded.

Vote: All were in favor.

Motion passed.

IV Standards Administration

A. Standards update

M. Leslie reviewed the recently approved ballot issues included in the 2018 edition of the DWTU standards.

B. Format of annexes

M. Leslie stated that a new format for annexes is being incorporated into the 2019 edition of the NSF standards. Normative annexes will be presented first, followed by

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V New Issues / Action Items for multiple standards

A. Structural Integrity Tables (DWTU-2019-2)

Motion: – Ballot corrections to the applicable structural integrity tables as described below under NSF/ANSI 42, 53, 244, and 401. T. Palkon motioned; F. Brigano seconded.

Discussion: M. Blumenstein explained that when the burst testing requirements were removed from NSF/ANSI 42 and 53 in 2011, the heading in Table 5 for components was accidentally deleted. In addition, it appears that the word “metallic” was not deleted from the category “disposable metallic pressure vessels and components.” He requested that this be corrected through a new ballot.

Vote: All in favor.

Motion passed.


1st Motion: Remove the language under NSF/ANSI 58 and 62 that allows for 10% of samples to not meet the effluent requirement under the contaminant reduction protocols. R. Regunathan motioned; F. Brigano seconded.

Discussion:

R. Regunathan stated that under NSF/ANSI 58 and 62 the standard allows 10% of samples to not meet the requirement if the overall mean meets the requirement. He noted that these are two of the most capable technologies and it no longer make sense to allow this type of deviation in the present-day context. He recommended that this allowance be eliminated and that all samples be required to meet the same level as listed for the NSF/ANSI 53 protocols.

A question was raised with regards to implementation. It was noted that that there would likely be an implementation period allowed by the testing agencies and certifiers. It was clarified that this proposal is for all contaminants, not just TDS. E. Leung stated that there is an issue with respect to nitrate and the ability to get even 70% efficiency. He expressed concern with regards to the 7-day test and TDS. He noted that this should not be a problem for other contaminants, however. S. Murphy stated that he didn’t disagree with the proposal but believed some initial research should be completed first to determine the impact on the industry. T. Palkon stated his opinion that this would not have a major impact but agreed that research should be done first.

The group discussed why this allowance was added to the standards in the first place. R. Herman explained that one reason was that the first sample taken after the weekend stagnation period can be elevated due to creep. He noted that this was very common 25 years ago. Several members stated their opinion that it is not acceptable to have the elevated level after this stagnation period. G. Hatch noted that in addition to nitrate, this may also be a problem for chlorate. R. Regunathan reiterated that it is only a problem because the system is not working properly, and if that’s the case it shouldn’t be certified.

Vote: 4 in favor (F. Brigano, M. Bicking, S. Ver Strat, R. Regunathan); 24 opposed; 1 abstention (F. Lemieux)
Motioned failed.

2nd Motion: Form a task group to consider the potential impact of removing the allowance discussed above under NSF/ANSI 58 and 62. R. Herman motioned; G. Hatch seconded.

Vote: All in favor.

Motioned passed.

TG: R. Herman (chair); R. Regunathan; T. Palkon; M. Bicking; Z. Gleason; E. Leung

C. Microplastics (DWTU-2019-6)

Motion: Form a task group to develop a protocol for POU and POE devices for the removal of microplastics from drinking water. The initial actions are to define microplastics with regards to size and determine what standard should cover this claim. S. Lee motioned; T. Palkon seconded.

Discussion: S. Lee explained that microplastics are defined as plastic fragments that are smaller than 5 mm in size. There are currently two classes of microplastics. Primary microplastics are those directly released in the environment as small particles such as microbeads. Secondary microplastics, in contrast, are a result of the degradation of larger plastics such as plastic bags and bottles. S. Lee referred to an Orb Media study that reported that 83% of tap water samples collected in the study contained plastic microfibers and over 94% of the drinking water samples taken from the U.S. contained microplastics. S. Lee stated that while the long-term effects of microplastics are still not fully understood, the JC should take a proactive approach and develop a protocol in the DWTU standards to remove these contaminants from drinking water. He proposed that a claim for microplastics reduction be based on the current cyst reduction protocol under NSF/ANSI 53 and 58 for polystyrene latex microspheres, which are in the range of 3 µm in size.

F. Lemieux stated her agreement with forming a task group but expressed concern on the approach. She stated that Health Canada is currently studying microplastics and is unable to determine toxicity because there are so many classes; these contaminants can’t be pinned down a single group. She also noted that NSF/ANSI 53 and 58 are based on health claims. Cysts are pathogenic. Since there is no health basis for microplastics they belong in a separate standard.

A. Fenwick suggested that NSF/ANSI 401 may be the appropriate standard in which to include these contaminants. A. Morgott stated the she views them as particulates since no health effects have been established; however, the particle size is not well defined. T. Palkon agreed that microplastics don't belong under NSF/ANSI 53 but perhaps could be included under NSF/ANSI 42 or 401 using particulate size for a surrogate claim. He added that he wouldn’t object to it being included under NSF/ANSI 58 since TDS is covered as well. S. Ver Strat agreed that there is a need to define microplastics with regards to size. However, since this is not an aesthetic effect NSF/ANSI 401 is the place to address it. R. Herman stated his agreement that NSF/ANSI 401 would be the appropriate standard with a reference to the method under NSF/ANSI 42. It was suggested that the initial charge of the task group should be to define microplastics with regards to size and determine what standard should cover this claim. The group could report back to the JC in six months.

Vote: All in favor.

Motion passed.
TG: K. Licko; A. Margott; J. McDonald; A. Patil; M. Graham; R. Regunathan; G. Hatch; S. Ver Strat; M. Nakayama; T. Palkon; G. Necula; M. Blumenstein; M. Unger; S. Lee

D. Task Group on Nitrosamine Reduction Claim

Discussion: A. Patil presented an update on the task group’s work. The initial straw ballot on the proposed protocol received negative votes with regards to the NDMA influent and effluent levels, stability of the influent solution, and the influent water characteristics. Prior to reconciling effluent levels, a NDMA pre-validation testing scheme was developed. Study results indicated that RO/UV treated water is suitable for the NDMA test and that the target influent concentration was achievable. The task group plans to further examine other factors that could cause interference, such as the material of the tank (glass, plastic, etc.) or as the volume of preparation increases. It was also determined that tannic acid is more suitable than humic acid to achieve the influent TOC concentration.

A. Patil reviewed the results of validation testing completed by Coway, which showed successful removal of NDMA. The next step will be to send a straw ballot of the proposed protocol to the JC for initial feedback. A. Patil stated that information on the stability of the NDMA challenge water will also be provided.

It was clarified that this protocol is to be included under both NSF/ANSI 53 and 58. The question was raised on the MAC level for NDMA. A. Patil noted that the proposed EPA MCL level is 7 ng/L, but some states have set it the value even lower (e.g., CA).

Action: Straw ballot of the proposed protocol for NDMA reduction will be sent to the JC for initial feedback.

E. Task Group on PFOA/PFOS (DWTU-2019-13)

Motion: Expand scope of task group to consider removal of other PFAS contaminants under NSF/ANSI 53 and 58. S. Ver Strat motioned; R. Herman seconded.

Discussion: A. Patil reported that the task group has completed its work for protocols under NSF/ANSI 53 and 58 for carbon, RO systems, and anion exchange for PFAS and PFOS. The carbon and RO protocols have been included in the 2018 edition of the standards; the anion-exchange protocol is currently under ballot. It was clarified that that the ion-exchange media is non-regenerative. A. Patil stated that other PFAs substances are now coming to the forefront. He recommended that rather trying to develop protocols for each of these contaminants, the task group should investigate the development of a surrogate compound that will cover all of these PFAs.

A. Patil stated that a second issue the JC should consider is how the saturated devices are disposed. Should the end of life of these products be the responsibility of this JC as well? B. Powitz suggested that an informational annex on proper disposal and potential waste problems could be included in the standards.

F. Lemieux noted that some of the other PFAs have health-based criteria, but not all have a sound scientific basis. The JC would need to determine what criteria should be used (e.g., state advisories levels). She stated that she was not opposed to using a surrogate, but the JC needs to be careful on how the claim is presented. A. Patil referred to studies that have indicated that PFAs suppress the immune system. He added that many of these compounds don’t yet have traditional MCLs, but if they have the potential to have an adverse effect, the committee shouldn’t wait for an MCL to be established to address the issue. Creating a surrogate will shorten the overall time to develop a protocol. F. Lemieux noted that in other cases the committee had validation testing to justify the use of the surrogate. The task group will need to study and develop criteria as a basis for a surrogate.
The group discussed the chloroform surrogate used for VOCs. R. Herman noted that it was the result of a multi-year effort. It included VOCs studies with chloroform and multiple types of carbon. He added that the JC had more information and understanding of VOCs than these PFA compounds. The toxicological information is still lacking, and they are difficult to group. B. Powitz asked if there are any other corporations or state agencies doing relevant work that are not currently represented on the task group. R. Regunathan stated his agreement with the chloroform work and noted that some of the studies were funded by Water Quality Research Foundation. He suggested that an initial task group project could be targeted to characterize of these chemicals leading up to a surrogate study. S. Murphy noted that the EPA recently awarded $4 million to PFOS research to the Colorado School of Mines and Oregon State University. C. Klevens stated that she supported the task group addressing the disposal issue. She added that New Hampshire is going to adopt a new MCL for PFAs compounds. The current level is at 70 ppt but will likely be lowered.

**Vote**: All in favor

**Motion passed.**

**Additional TG members**: A. Lundquist; S. Lee; A. Fenwick; C. Klevens

F. **ASSE 1087 (DWTU-2019-4)**

1st **Motion**: Add ASSE 1087 as a normative reference in the DWTU standards. F. Brigano motioned; S. Murphy seconded.

**Discussion**: S. Buck reviewed the scope of the new ANSI/ASSE 1087 standard that covers commercial and food service treatment equipment. He noted that it covers any plumbed water treatment unit device, component, POE and POU that is used in a building for commercial use. It does not include any contamination reduction testing, however. It has been introduced for inclusion into the 2021 edition of the Uniform Plumbing Code, which would fill gaps currently present for code regulators (e.g., large scale water softeners outside of the scope of NSF/ANSI 44). S. Buck asked for feedback from the JC on what if anything should be done with regards to the DWTU standards.

The group discussed the fact that there a lot of manufacturers that make products intended for residential use but that are used in a commercial setting (e.g., restaurants). The question was raised as to whether ASSE 1087 should be included under the scope of the DWTU standards as a reference. It was noted that ASSE 1087 references NSF/ANSI 42 and 53 for structural integrity. Several members expressed concern that there is a lot of overlap with the DWTU standards. B. Powitz suggested that this issue be brought to Food Equipment JC as well. F. Brigano noted that the ASSE standard does not define commercial use. He raised the question of whether a RO system that is installed in a water cooler would have to meet ASSE 1087. R. Herman stated that the commercial modular definition is very broad. He noted that the NSF standards have a very specific definition that may not match what is in ASSE standard.

F. Brigano referred to the example of a soft drink dispenser that has a flow rate greater than 4 gpm. Would that fall under the ASSE standard? There was disagreement among members with regards to the scope of ASSE 1087 and what products would be included. F. Brigano stated that the ASSE committee should provide clarification on the scope of the standard. There was general agreement among the group that the NSF standards should include ASSE 1087 as a normative reference, however.

**Vote**: All in favor.
Motion passed.

**2nd Motion:** A memo should be sent from the JC Chair asking the ASSE committee to clarify the scope of ASSE 1087. H. Patel motioned; F. Brigano seconded.

**Vote:** All in favor.

**Motioned passed.**

G. WQA ORD1901 (DWTU-2019-14)

**Motion:** Form a task group to address how health-based claims for the removal of manganese can be incorporated into NSF/ANSI 44, 53, 58 and 62. R. Regunathan motioned; F. Brigano seconded.

**Discussion:** R. Regunathan provided a brief background on the concerns surrounding elevated levels of manganese in drinking water and Health Canada’s new enforceable maximum allowable concentration (MAC) level of 0.1 mg/L (June 2016).

R. Regunathan stated that the NSF DWTU standards do not currently include a health-based claim for the removal of manganese (there is an aesthetic claim under NSF/ANSI 42). The Water Quality Association (WQA) partnered with NSF International, Health Canada, the Standards Council of Canada, and the American National Standards Institute to issue a temporary standard to address this gap. The end goal, as agreed upon by all partners, is to incorporate manganese claims into the NSF DWTU standards so that WQA’s temporary standard can be withdrawn to eliminate duplication of standards.

The question was raised on whether this would eliminate the manganese claim under NSF/ANSI 42. It was suggested that it could be in both places, but that will be something for the task group to decide.

**Vote:** All in favor.

**Motioned passed.**

**TG:** E. Yeggy (chair); R. Regunathan; D. Lytle; F. Lemieux; A. Patil; R. Herman; M. Bicking; T. Palkon; M. Huntoon; M. Unger; J. McDonald; G. Necula

VI NSF/ANSI 42

A. Testing Powder Material (DWTU-2019-7)

**Motion:** Ballot proposed language as written. R. Herman motioned; T. Palkon seconded.

**Discussion:** S. Randall reported that carbon blocks often contain other compounds that enhance contaminant adsorption or enhance water quality (e.g., activated alumina for lead adsorption). He explained that NSF has seen problems with the current protocol under 4.2.3.1.1 for manufacturers who submit these compounds for testing for NSF/ANSI 42 compliance. These compounds may be used at 1/10th or less of the procedure’s evaluation dose. S. Randall stated that providing flexibility in the evaluation dose will address two possible issues. First, it would eliminate products from failing at an artificially high dose. Allowing the manufacturer’s specified application rate could meet the health effects requirements for contaminants. Second, testing at 200 g/L but approving an additive at 4 g/L could hide saturation effects, where an ingredient saturates the test water regardless of
the tested dose. If tested to the manufacturer’s specified application rate, the ingredient would still saturate to the same or similar concentration and the testing would be treated as a failure without a restriction recourse. He referred to an example in which this effect is seen with copper salts from copper fittings. It was clarified that this is for extraction testing of components only.

H. Patel suggested that the current language under 4.2.3.1.1 of using a ratio of 200 g media to 1-liter exposure water be removed to solve this issue. S. Randall explained that the lab has found that 200 g is the upper level of media needed to have an effective test. You need enough extraction water to pull out of the media (it forms a slurry and is difficult to pull apart). Rather than leave it open the proposal is to specify a method to give labs guidance on how to do this. R. Herman agreed and added that the lab has a problem with mesh finer than 100.

**Vote:** 28 in favor; 1 opposed (F. Brigano)

*Motion passed.*

### B. Particulate Reduction (DWTU-2019-12)

**Motion:** Form a task group to recommend a range for the influent challenge for particulate reduction under NSF/ANSI 42. T. Palkon motioned; S. Ver Strat seconded.

A. Margott explained that the current influent challenge for mechanical reduction testing under NSF/ANSI 42 specifies a minimum particulate concentration but no maximum. This allows for an influent to vary significantly throughout the test. She gave an example of a test that had an influent concentration of 5 million particles per milliliter at both the startup and the 4th cycle, but at the 50% point had a concentration of only 170,000 particles per milliliter. She stated that an influent challenge concentration that is significantly higher at the beginning of the test than at the end can bias the effluent collected at the end of the test. She suggested the formation of a task group to add a boundary around the influent level.

**Vote:** All in favor.

*Motion passed.*

**TG:** A. Morgott (chair); G. Necula; T. Palkon; G. Hatch; H. Patel; M. Graham; J. Wolff; R. Regunathan; S. Evans

Note: The suggestion was made to also invite Susan Goldsmith and/or other labs to participate on the task group.

### VII NSF/ANSI 55

#### A. Task Group on UV Disinfection

**Motion:** Ballot proposed revisions to NSF/ANSI 55. C. Caldwell motioned; F. Lemieux seconded.

**Discussion:**

C. Caldwell reviewed the original charge of the UV task group and provided a brief history of the activities since the 2018 meeting. The group was to consider alternate technologies for UV systems that operate across a broader range of wavelengths. The scope of NSF/ANSI 55 is currently limited to low-pressure mercury systems at 254 nm.
Several rounds of validation testing were completed by NSF on systems with UV ranges from 254nm to 285nm. From these studies the task group concluded that the most stable absorber across the proposed UVT range is a superhume-vanillian mix. The task group also concluded that Q-beta is an acceptable surrogate to rotavirus and performs in a slightly more conservative way. This holds true at both ends of the UV range being examined (254nm to 285nm).

In 2019, a final validation study was conducted on currently certified product (low-pressure mercury lamp), which showed very consistent results across 4 tests. The question was raised on whether the collimated beam study was no longer required. C. Caldwell clarified that the task group is recommending that that the existing protocol remain in NSF/ANSI 55 for current systems for five years. However, the manufacturer will also have the option of evaluating their product to the new method. The new method using Q-beta would be required for devices with wavelengths other than 254 nm and would have the following criteria:

- 4-log reduction of Q-beta at the alarm set point for Class A devices
- 1.5-log reduction of Q-beta for Class B with UV source irradiance at 70% normal output or 2.14-log reduction with UV source irradiance at 100% normal output.

It was noted that the superhume is an agricultural additive that is currently only available from one supplier.

It was noted that in the last validation study that the UVT emittance was at 67%. R. Herman clarified that the target is 70%. The test was run at an average of 67% (66-69% for the 4 tests) and all had 4-log reduction.

R. Regunathan expressed concern over specifying a 2.14 log reduction for Class B devices. He noted that one of the early drafts of the protocol indicated 2.5 log reduction. R. Herman explained that originally the task group had suggested a 2-log reduction for Class B systems and a 2.5 log reduction for systems operated at full output. After further consideration it was found that 1.5 log reduction of Q-beta still resulted in a dose in excess of 16 mJ/cm² so the baseline dose for end of life (defined as when irradiance reaches 70% of initial output) was changed to 1.5 log reduction. Two methods to evaluate Class B devices are provided, one requires the output of the UV source to be reduced to 70% of it’s output after a 100-hour burn-in and reduce Q-beta by 1.5 log. The other raises the required log reduction to 2.14 logs for products that cannot easily reduce the UV source output. The 2.14 is based on the response of Q-beta and the required log reduction when the UV source is operating at 100% normal output. They are equivalent in the actual performance requirement, one evaluates at end of life, the other at beginning of life. A document was provided which goes into further detail that demonstrates the validity of this approach.

R. Regunathan stated his belief that validation testing should be done on a current Class B unit. R. Herman noted that the validation studies competed were not the validating systems themselves. The original studies evaluated different wavelengths and log reduction. All the premises made for a 4-log reduction apply at 1.5 log reduction. The dosimetry is a linear curve. F. Lemieux added that by looking at the dose-response curve one can determine what the log reduction would be at 16 mJ/cm². R. Herman agreed and noted that for Q-beta it’s actually better than 16 mJ/cm².

Vote: All in favor.

Motion passed.

B. Plastic Materials (DWTU-2019-1)
Discussion: T. Palkon explained that the current minimum performance requirements under section 6 of NSF/ANSI 55 specify that “the manufacturer shall provide information to substantiate that plastic components exposed to UV will not lose structural integrity after prolonged exposure to the extent that the performance of the system is adversely affected.” He stated that during a recent audit with the Standards Council of Canada it was noted that there was no test procedure to validate this. Because this is difficult to verify, T. Palkon recommended that this requirement either be eliminated, or a list of approved plastics be created.

The question was raised on whether this could be covered under NSF/ANSI 14. Is there a UV resistivity test that could be referenced? R. Herman indicated that this is a much higher intensity UV. The NSF lab could provide a recommendation of materials that would be resistant to UV degradation, however. S. Murphy stated that his preference would be to leave the requirement in the standard and give examples of acceptable materials. A. Babaie suggested to keep the content under NSF/ANSI 55. As a manufacturer he would rather not have to refer to another standard for material safety requirements. S. Ver Strat stated his support of including a list if it is not exclusive. T. Palkon agreed and added that it wouldn’t only be the listed materials that are acceptable, but if listed no more additional data would be required. The way it is currently written doesn’t give a lot of guidance to users. A. Margott stated her agreement with the list and added that some plastics are modified to be more UV resistant and the testing labs would want to consider during extraction testing.

Action: T. Palkon agreed to work with the other certifying labs to create an approved list of materials for the JC to consider.

VIII NSF/ANSI 58

A. Sample Size (DWTU-2019-11)

Discussion: T. Beal proposed that the sample size for RO systems under NSF/ANSI 58 be increased from 8 oz to 16 oz, as this is more reflective of typical use. R. Herman provided a brief background on how the 250 ml sample size was determined, which was revised in the standard a few years ago. The concept was that the smaller the volume the more likely one would pick up creep and serve as a greater challenge for the units. He noted that 250 ml is considered the minimal draw but is more than enough for sampling. With larger volumes the creep will be diluted. The performance will be better, but there are people using smaller draws with less volume. T. Beal agreed but noted that the bottled water industry currently uses 16 oz, and that other prepackaged drinks are a minimum of 16 oz as well. He added that the typical use for a RO system would not be one glass at a time. He expressed concern that the current test is skewing the results.

The group discussed the fact that a typical RO draw of 250 ml is coming from the storage tank, not the membrane. However, there are some technologies in which the first draw comes from the membrane and creep occurs. The results will be different. T. Beal added that for other technologies the efficiency of a 250 ml draw happens to be the same amount of water that is depressurizing; it is skewing the efficiency test and skewing the actual quality of water coming from the system. R. Herman stated that the current requirements for efficiency are not related to the direct volume. Changing the sample size will not change the efficiency results.

The question was raised on the potential effect of changing the sample size. R. Herman stated that it could affect the pass/fail rate, but overall this wouldn’t have an impact on industry for typical RO systems. T. Sorg suggested that if the current sample size is conservative and there is no negative impact on the industry then it should be left as is. R. Herman agreed that many people drink a larger volume of water, but there are still many
cases in which a smaller volume is used. T. Palkon stated that the current protocol possibly gives a slight advantage to a tank system. It is less practical for the new tankless systems.

T. Palkon recommended that participating labs could do a comparison between a 250- and 500-ml draw. B. Powitz agreed that it was an excellent idea and suggested that the certifiers could work together to share this information without necessarily forming a formal task group.

**B. Arsenic (DWTU-2010-7)**

**Motion:** Ballot proposed revision with suggested change as discussed below. F. Brigano motioned; F. Lemieux seconded.

M. Unger reported that previously an issue paper was submitted for the arsenic reduction claim under NSF/ANSI 58 to specify that a chlorine residual be added to ensure any arsenic remains in the pentavalent form. This issue paper was presented at the 2010 annual JC meeting and was approved for balloting but due to administrative error never completed the balloting process.

R. Regunathan asked if there is any concern that the chlorine will have an effect on the membrane. M. Unger confirmed that there is, but the level of residual chlorine being added is low (0.25 - 0.5 mg/L). Over the 7-day test one wouldn’t see any degradation. T. Palkon stated that he had reached out to a membrane manufacturer and confirmed that they didn’t see any issues with this. He suggested that this language could be added as a note or “should” so that it is optional instead of a requirement. G. Hatch noted that Dennis Clifford did a study with a lot of different oxidants and chlorine and showed that pentavalent arsenic will convert back to trivalent arsenic very quickly under certain conditions. One of his papers showed that chloramine does not oxidize; however. He suggested that perhaps a note could be added to clarify this.

T. Sorg stated that it is unusual for pentavalent arsenic to convert back to trivalent arsenic and asked whether the lab had done speciation. M. Unger confirmed that the lab had and determined that most of it had converted to the trivalent form. He added that this happened again a couple of months ago in another test.

F. Lemieux suggested that the proposed language not specify what has to be added to achieve the chlorine residual. E. Leung suggested that the addition of residual chlorine could be optional and allow the lab to speciate. T. Palkon stated that in this case the starting water is DI water, not tap city water so it makes sense to specify the chlorine. He added that speciation is not done in a lot of the labs.

**Vote:** All in favor.

**Motion passed.**

**IX NSF/ANSI 62**

**A. Task Group on New Lead Requirement**

**Motion:** Ballot revision of pass/fail criteria for lead reduction from 10 µg/L to 5 µg/L under NSF/ANSI 62. S. Ver Strat motioned; R. Herman seconded.

**Discussion:**

S. Ver Strat reported on the task group activities to date. A ballot was recently submitted and approved by the JC to revise the pass/fail criteria for lead reduction from 10 µg/L to 5
μg/L under NSF/ANSI 53 and 58. During task group discussions, it was also noted that NSF/ANSI 62 also provides guidance on the lead effluent level, using TDS as a surrogate. Upon review of the data from the original study (described under Annex A), the task group has determined that lead could remain on the surrogate list with the new effluent level of 5 μg/L.

**Vote:** All in favor.

**Motion passed.**

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**NSF/ANSI 177**

**A. Task Group Update –177i6r1 Test Water Parameters**

**Discussion:** G. Hatch provided a summary of the negative comments received from the current ballot. F. Brigano stated his opposition to revising the test water specifically for this standard after 15 years of using a known test water. D. Farley explained that NSF/ANSI 177 was originally semi-based on NSF/ANSI 42, which is based on carbon filtration using adsorption. However, he noted that NSF/ANSI 177 is based on copper-zinc reoxidation with different chemistries involved using negative electrochemistry. Issues were being seen in the recertification of products. Products that originally passed were not able to get the same results as the initial testing and were failing. D. Farley added that with adsorption, if something is added to the water one would typically observe lower performance. However, in the reduction process the actual water chemistry can change. This issue came to light when two different labs were not able to get consistent results testing the same product. To get consistent results, a standard synthetic base water is needed. G. Hatch agreed and stated that the charge of the JC was to try and resolve this issue by developing a standard test water.

F. Brigano stated that when NSF/ANSI 177 was developed in 2004 the test water was not based on any particular technology (i.e., it was not based on adsorption). I. Al-Kharusy stated that the majority of the task group members have asked for this standard to be based on NSF/ANSI 42. R. Herman clarified that the original shower filter water was based on NSF/ANSI 42 water, but then some additional parameters were added to address these products specifically (chloramines were not to be added, the temperature was set to 42°C, etc.) This standard already differs from NSF/ANSI 42 based on technology and type of use. There are extremely short contact times, the flow rates differ, and more volume is used. R. Herman stated that the labs don’t see this variability with NSF/ANSI 42 testing. He added that other standards deviate from the standard water to address variances based on what is important in the test. For example, for perchlorate testing, sulfate is included because it will interfere with anion exchange.

R. Herman referred to the national occurrence data used to establish the parameters. This will be included as a reference in the upcoming adjudication ballot for the JC to review. R. Herman reiterated that the charge of the task group wasn’t to set those values, it was to find out what parameters are causing significant differences between the labs (TOC, alkalinity, etc.) and then to validate that there would not be variability between the labs from the high end of the range to the average levels. G. Hatch added that the DWTU standards often include the addition of parameters to the basic test waters to challenge the systems with a worst-case scenario.

T. Palkon stated that the validation study clearly demonstrated that alkalinity has an effect on zinc and copper. R. Herman reiterated that the values added to the test water are national averages for chlorinated municipal waters. They were not added to help or hurt any technology, but rather to simply have a standardized number.
B. Materials Extraction (DWTU-2019-3)

**Motion:** Ballot proposed revisions as written. R. Herman motioned; T. Palkon seconded.

**Discussion:** S. Buck explained that the materials extraction requirements under section 4 of NSF/ANSI 177 are not in line with the rest of the DWTU standards with regards to the formulation information needed. The current language makes it prohibitive for some manufacturers to provide this information from lower tier suppliers. This needs to be clarified as was previously done in the other DWTU standards.

**Vote:** All in favor.

**Motion passed.**

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**XI NSF/ANSI 244**

A. 244i4r1 (straw ballot)

**Discussion:** M. Leslie reported that an initial straw ballot was sent out for this issue in April and has received 100% affirmative votes. She noted that a couple of minor editorial suggestions have been received. The question was raised on whether it was necessary to resend the draft out as a formal ballot. M. Leslie confirmed that it is required, as ANSI was not notified, and the draft was not previously made available for public comment.

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B. Annexes A and B (DWTU-2019-9)

**Motion:** Send proposed revisions to ballot as written. T. Palkon moved to ballot; R. Herman seconded.

**Discussion:** M. Blumenstein stated that now that testing for NSF/ANSI 244 has begun, NSF’s microbiology lab has determined several instances within the preparation methods under Annexes A and B that need additional detail and clarification. This will ensure consistency among certifying labs.

**Vote:** All in favor.

**Motion passed.**

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**XII Informational/Task Group Updates**

A. Task Group on Literature Requirements (Data Plate)

**Discussion:** S. Ver Strat reviewed the charge of the task group, which is to harmonize the data plate requirements across the DWTU standards and consider what information should be included. S. Ver Strat reported that the group held four meetings over the past year to review the list of current requirements and is currently finalizing the draft of recommended changes.

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B. Nitrosamine Extraction Testing

**Discussion:** K. LeVanseler reported that the task group discussed the analytical method for nitrosamines and has determined that EPA 521 is sensitive and reproducible. However, challenges remain with the low background NDMA levels in the exposure water and controls. Lab experience has shown that avoiding deionized water or using supplemental UV treatment has helped to control background levels of NDMA. At the last meeting, the group proposed a round robin study between multiple labs to evaluate the reproducibility
of material extraction. However, it has been challenging to find labs to participate in the study due to the cost of running EPA 521. K. LeVanseler suggested that an alternative approach could be to run a test with three labs performing the same extraction protocol of a known positive material. A single lab could then perform EPA 521 on the extraction water samples and compare.

G. Hatch asked what level of intensity or dose would be needed to destroy NDMA. R. Herman stated that a 254 nm unit is used at a 250 mJ dose with a very low flow rate for NDMA levels in the teens. The other unit that has been used is at a 185 mJ dose down to single digits of NDMA of a single pass. This was done on DI water to just attack those trace background levels. R. Herman noted that the resistivity lessens but the water is purer.

C. Task Group on Higher Lead Influent

**Motion:** Develop a draft ballot protocol using the parameters under option 1 and develop an informational annex per option 3 below. R. Herman motioned; T. Palkon seconded.

**Discussion:** A. Patil provided an update on the recent task group work. He stated that at the last meeting the group was unable to reach consensus on the path forward and noted that there were objections that the proposal doesn’t really reflect what the JC is trying to convey to the consumer. He presented several options that have been discussed by the task group and asked the JC for feedback on the direction that the task group should take.

Options:

1) Use 2-3 spikes of lead only at a concentration of 1000 ppb;
2) Use 2-3 spikes of lead at 1000 ppb along with orthophosphate (1-2 mg/L) and iron (0.1-0.8 mg/L); or
3) Publish an informational annex explaining why the current protocol is working and why consumers should have confidence in the current test with lead spikes higher than 150 ppb (current influent challenge).

T. Palkon and G. Hatch expressed their support for option #1. It was confirmed that this would apply to the pH 8.5 water only. R. Herman stated that the body of evidence of the success of the current protocol is overwhelming. He agreed that an informational annex would be helpful but believed questions will still come up as to why a higher lead concentration is not tested. He recommended doing both options #1 and 3. The testing will verify a listing and the informational annex will provide additional clarification for regulators.

M. Schock agreed that this is public relations problem. However, this is also a particulate removal issue. He noted from the study presented the change in particle size distribution when orthophosphate was added (smaller particles were produced). The issue is that there is not a representative particle size. A uniform particle can be created in the lab, but it doesn’t reflect what is seen in the field. He suggested a fourth option of tweaking the worst-case scenario with the challenge water containing smaller particles. He expressed confidence in ability of products to remove the lead but reiterated that it will be difficult to nail down a specific water and parameters for the test.

S. Murphy stated that at the time of the Flint crisis five years ago, manufacturers couldn’t confirm that their filters could remove the lead at this higher level because they hadn’t tested to that level. He stated his belief that there is an immediate need to evaluate these products at a higher level.

Several members expressed concern that adding orthophosphate to the tanks would ruin them. The question was raised whether the testing under option #1 (without the presence
of orthophosphate) would create huge particles. R. Herman clarified that the current protocol with the 150 ppb influent challenge also contains fine particles.

M. Schock expressed concern that a 1000 ppb challenge would still not be representative of issues seen in the field. He noted that Boston, Milwaukee, and other cities have specific problems with iron in the water also. J. McDonald added that the test water pH is not reflective of the real world either. H. Patel agreed that stated that there is a need to better understand the various water scenarios.

**Vote:** All in favor.

**Motion passed.**

**D. Uranium**

**Discussion:** T. Sorg stated that now that the task group has completed the protocol for the uranium reduction claim under NSF/ANSI 58, the next task is to develop a protocol for NSF/ANSI 53. He reviewed the current technologies that would fall under this scope: anion resins (regenerable or one-time use), activated alumina (one-time use), and iron-based media products (one-time use). He noted that are disposal issues to consider. Treating water for naturally occurring radionuclides will result in residual streams that are classified as technologically enhanced naturally occurring radioactive materials (TENORM). TENORM is defined as naturally occurring materials, such as rocks, minerals, soils, and water whose radionuclide concentrations or potential for exposure to humans or the environment is enhanced as a result of human activities (e.g., water treatment). T. Sorg stated that as of 2005, thirteen states had regulations addressing TENORM. G. Hatch noted a similar example of radium found on softeners.

R. Regunathan stated his agreement that the task group should finish their charge but questioned whether any product would be submitted for testing. It will be tougher to market it and have it serviced. T. Sorg reiterated that is not an issue of exposure but of disposal. He stated that he would await the outcome of the upcoming task group survey, however, to determine if this is a priority for the JC to complete within the next few months.

**E> Health Advisory Board updates**

**Motion:** Form a task group to review the updated pass/fail criteria to confirm if there are any contaminants that need to be revised for DWTU reduction claim pass/fail levels. R. Herman motioned; G. Hatch seconded.

**Discussion:** K. Cox provided an update on the pass/fail criteria based on the ongoing efforts of the NSF Health Advisory Board (HAB) and Joint Peer Review Steering Committee (JPRSC). He also reviewed the current ballot proposing revisions to the toxicological evaluation procedures under NSF/ANSI/CAN 600 (previously Annex A), which has not had a major update since its development in 1999. In 2011, the EPA Exposures Handbook considered new data and revised its recommendations to a L/kg-day intake rate instead of separating body weight and DWI. The new default will be the 90th percentile of all ages, which equates to an ingestion rate of 0.033 L/kg-day.

R. Herman suggested that as a result of some of the revised materials pass/fail criteria, this committee may need to change the influent levels and pass/fail criteria in the DWTU standards. R. Regunathan noted that xylene and ethyl benzene may be contaminants that need to be reviewed. K. Cox clarified that the SPAC applies to NSF/ANSI/CAN 60 and 61, but that the DWTU standards use the TAC. R. Herman agreed that the TAC is used which is the same as the MCL or MAC level for the pass/fail criteria.
Vote: All in favor.

Motion passed.

TG: K. Licko; R. Herman; G. Necula; S. Ver Strat; S. Buck; F. Lemieux; R. Regunathan; T. Palkon

XIII New Business

IX Committee Administrative Issues

The next meeting date was tentatively set for Wednesday, May 13, 2020.

R. Herman motioned to adjourn the meeting. T. Palkon seconded. All were in favor and the meeting was adjourned.
Meeting Participants

Joint Committee Members

Chairperson, Bob Powitz

Public Health/Regulatory

Anita Anderson (MN Dept. of Health)
Jeff Kempic (USEPA) – via phone
Cynthia Klevens (NH Dept. of Environmental Services)
France Lemieux (Health Canada)
Eugene Leung (CA Waterboard Division of Drinking Water) – via phone
Darren Lytle (USEPA)

User

Zac Gleason (WQA)
Rob Herman (NSF)
Frank Kurtz (AWWA)
Janick Lalonde (National Defense & Canadian Forces)
Art Lunquist (US Army Public Health Command)
Philip McCrory (Consultant)
Tom Palkon (IAPMO)
Mikail Starostin (Green Mountain Coffee Roasters, Inc.)

Industry

Vice Chairperson, Frank Brigano (KX Technologies)
Margaret Bicking (Ecowater Systems)
Chris Caldwell (Viqua)
Andrew Fenwick (Jacobi Carbon)
Sun Yong Lee (Coway)
Shannon Murphy (TST Water)
Mikiko Nakayama (Mitsubishi Chemical Cleansui Corp.) – via phone
Hemang Patel (Cuno, a 3M Company)
Arvind Patil (Ricura)
Steve Ver Strat (Access Business Group)
Joe Wolff (Elkay Manufacturing)

Non-Voting Emeritus Members

Gary Hatch (Hatch Global Consulting)
Regu Regunathan (Regunathan & Assoc) – via phone
Tom Sorg (retired -USEPA)

Proxies

Brook Hatton (CSA) – proxy for F. DiFolco

Joint Committee Members not in attendance

Franco DiFolco (CSA)
George Lai (Ontario Ministry of the Environment)
Klaus Seeger (Seeger & Associates - Environmental Public Health Services)

Observers

Matt Adomaitis (Pentair)
Issa Al-Kharusy (KDF)
Kirtipal Barse (Jacobi Carbon)
Ashkan Babaie
(Acuvatechnologies)
Mark Brotman (Kinetico)
Richard Cook (Consultant)
Tina Donda (IAPMO) – via phone
Sean Ellis (KLT Filtration)
Sarah Evans (Ahlstrom-Munksjo)
Douglas Frederick (UL)
Melanie Graham (GE Appliances)
Melissa Hall (CA Waterboard Division of Drinking Water)
Jim Kendzel (ASA) – via phone
Jun Kim (Amway)
Shayna Kriss (Paragon)
Kelly Kriva (Pentair)
Amit Lathia (CSA)
Andrew Marschner (Pentair)
Amanda Morgott (Amway)
Jonathan McDonald (Clorox Services Co.)
Stacie Ott (WQA) – via phone
Ryan Prince (GE Appliances) – via phone
Ed Robakowski (Kineto) – via phone
Ann Scleinz (WQA)
Mike Schock (USEPA)
Colby Smith (Calgon Carbon Corp.)
Becky Tallon (A.O. Smith)
Mark Unger (Paragon)
Walt Vance (Kinetico)  David Wassilak (Amway)

**NSF International Staff**

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