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## Summary of TRC Call Agenda for 8/3/20

The following is a summary of phone-based discussions for Change Requests (CRs) addressed by the Technical Review Committee (TRC) for the week of 8/3/2020. A link the recording of the call can be viewed at the CMAHC's Youtube channel by visiting our website at <https://cmahc.org/technical-review-committee.php>.

Members Present: James Amburgey, Kevin Boyer, Michele Hlavsa, Joe Laco, Cindy Marshall, Ellen Meyer, Chris Nelson, Joe Stefanyak, Amanda Tarrier, Miklos Valdez

Members Absent: Jodi Jensen, Tina Moore, Jason Schallock

CYA CRs: The technical director provide an update on the CRs submitted by the CYA Ad Hoc committee. The Ad Hoc committee is finalizing changes to the CRs and the TRC will likely review and vote on this as part of the final email agenda.

**4.7.3.3.1-0001:** This CR proposes to require secondary disinfection on all aquatic venues (new construction or substantial alteration). The TSC feedback was mixed, the Disinfection and Water Quality TSC recommended since it was a best practice, but the Design and Construction TSC did not, citing high cost, and data not justifying the cost of requiring for all types of aquatic venues. The TRC felt that although many new aquatic venues are constructed with secondary disinfection systems, requiring secondary disinfection systems with 3-log Crypto inactivation for all aquatic venues would be a huge change, and also would preclude installing systems with 1 or 2 log reduction. Any aquatic venue can choose to install a secondary disinfection system, but this is a very prescriptive requirement that is not justifiable at this time. The TRC unanimously recommended a No vote on this CR.

**4.7.3.3.2-0001:** This CR is part of a group of CRs that would change the term "secondary disinfection" to "secondary treatment" to allow for other processes, such as filtration, to be installed for Crypto reduction and count toward the log removal. This CR proposes to change the terms throughout the MAHC where warranted, to change the definition of secondary disinfection to secondary treatment, and include language regarding "secondary treatment systems providing disinfection" where appropriate. The TRC recommended a Yes vote on this CR.

**4.7.3.3.2.1-0001:** This CR was withdrawn by the submitter due to a related CR already addressed by the TRC that had a recommended Yes vote.

**4.7.3.3.2.1-0002:** This CR proposes the following changes to section 4.7.3.3.2.1: SECONDARY TREATMENT DISINFECTION SYSTEMS shall be designed to achieve a minimum 3-log (99.9%) reduction in the number of infective *Cryptosporidium parvum* OOCYSTS per pass through the SECONDARY TREATMENT DISINFECTION SYSTEM for INTERACTIVE WATER PLAY AQUATIC VENUES and a minimum 2-log (99%) reduction per pass for all other AQUATIC VENUES. Each SECONDARY TREATMENT SYSTEM may be composed of multiple treatment processes or steps that result in the total required reduction in the number of infective *Cryptosporidium parvum* OOCYSTS per pass through the SECONDARY TREATMENT SYSTEM. The TRC felt that this would allow for use of filtration systems that could provide a 1-log reduction, and recommended a Yes vote on this CR.

**4.7.3.3.2.5-0001:** This CR proposes the following change in order to account for calculation of flow rate for systems providing other than 2 or 3 log Crypto reduction: 4.7.3.3.2.5 Equation Accounting for a 3-log (99.9%) or 2-log (99%) reduction of infective *Cryptosporidium* OOCYSTS through the SECONDARY DISINFECTION SYSTEM with each pass, The SECONDARY DISINFECTION SYSTEM flow rate (Q) shall be:  $Q = V \times \{[14.8 - \ln(V)] / (r \times 60 \times T)\}$ . The TRC discussed that the annex includes background for use of the equation and agreed that it made sense to use for other applications such as 1-log reduction through filtration. The TRC recommended a Yes vote on this CR.

**4.7.3.3.3.1-0001:** This CR proposes to add the following to the section on validation of UV equipment used for secondary disinfection: UV equipment shall be third party validated in accordance with the practices outlined in the EPA Ultraviolet Disinfectant Guidance Manual dated November, 2006, publication number EPA 815-R-06-007. UV equipment designed for splash pads shall be validated according similar practices for wastewater treatment equipment. The TRC discussed the TSC's feedback and the need for equipment to be validated for the UV Transmissivity (UVT) levels actually present during operation. The TRC discussed the ways the MAHC currently addresses UVT. They felt that this specific requirement for splash pads may be too revolutionary in part due to the higher cost for units validated for low transmissivity. The TRC proposed modified language that made the proposed addition an "or" with the current language, changing splash pads to interactive water play aquatic venues to be consistent with other parts of the MAHC, and to cite the specific EPA guideline used for validation of wastewater systems similar to how the UVDGM is currently cited. Also, Annex language will be added explaining the rationale for recommending units validated to wastewater standards due to the low UVT levels found during splash pad operation. The CR submitter will draft language that includes these modifications and the CR will revisit and vote on this CR over email.

**4.7.3.3.3.10-0001:** This CR proposes to add the following to section 4.7.3.3.3.10: Based on the recommended validation protocol presented in the EPA Disinfection Guidance Manual, UV reactors certified by ÖNORM and DVGW for a *Bacillus subtilis* RED of 40mJ/cm<sup>2</sup> shall be granted 3-log

Cryptosporidium and 3-log Giardia inactivation credit as required in this CODE provided that the aquatic venue's treated water UV transmissivity remains within the validated range of the UV system. It was discussed that this was intended to serve more as a reminder about the importance of considering operational UVT levels and was considering a less drastic change than requiring UVT monitoring by operators. The TRC discussed that UVT monitoring is already required if the manufacturer's specifications require it. The TRC recommended a Yes vote on this CR.

**4.7.1.2.2-0001**: This CR was being revisited by the TRC. Modifications to the original proposed language were made to better incorporate the requirements for a minimum 1-log (90%) reduction per pass for pools having a treatment system combined with other aquatic venues into the section on secondary treatment requirements. The CR submitter had agreed to the modifications. The TRC recommended a Yes vote on this CR.

**4.7.3.3.4.2-0001**: This CR proposes the following changes to the section on third party validation of ozone systems: Ozone systems shall be ~~validated by an ANSI accredited third party testing and certification organization to confirm that they provide the required log inactivation of Cryptosporidium in the full SECONDARY DISINFECTION SYSTEM flow after any side stream has remixed into the full SECONDARY DISINFECTION SYSTEM flow and~~ designed to measure the Concentration of ozone at a minimum of two sampling locations to determine the CT value achieved in the treatment system prior to return of the water to the AQUATIC VENUE or AQUATIC FEATURE recirculation treatment loop. A CT value of 4.9 mg/L\*min is required for 99% (2 log) Crypto reduction at a water temperature of 25 C (or 7.4 mg/L\*min is required for 99.9% (3 log) Crypto reduction at a water temperatures of 25 C). The TRC questioned if this could be determined on site at the aquatic venue, and discussed that there would be needed annex explanation on sample locations and taking into account that the ozone residual in the pool must be less than 0.1 ppm. The TRC also proposed that this addition be added as an "or" with the current language, instead of deleting the current language, so that it would allow for more incremental change. The CR submitter agreed to this and to propose revised wording and Annex language. This CR will be revisited and voted on over email.

**4.7.3.3.4.7-0001**: This CR was withdrawn by the CR submitter because the proposed change was contrary to the typical ozone system injection location.

**4.4.3.3.5-0001**: This CR was mis-numbered as there is no MAHC section 4.4, and the proposed changes are for section 4.7.3.3.5, and provide credit for 1-log Crypto removal for filtration systems. The TRC recommended a No vote on this CR as they recommended a Yes vote on CR 4.7.3.3.5-0001, which is more comprehensive.

**4.7.3.3.5-0001**: This CR proposes criteria whereby filtration could be used as a secondary treatment system in increased risk aquatic venues. Although it would be ideal to point to an existing standard, the

TRC discussed that there aren't any yet. The TRC also discussed the various options for certification and determined that all should be continue to be included, and it was up to the discretion of the AHJ if they wanted to require more than one of the options. The TRC proposed changed the language in the NSF option to match the format of how it is used in other MAHC sections,; the CR submitter agreed to this. The TRC recommended a Yes vote on this CR.

**3.2-0020**: This CR proposes changes to the definition of pH that would result in significant deletion of background information. The TRC discussed that they had set a precedent on the previous call with leaving in helpful information in MAHC definitions, and that there were other ways to make the MAHC more concise without losing useful material. The TRC recommended a No vote on this CR.

**3.2-0037**: This CR proposes a definition of Total Bromine and for TB to be added to the acronyms section. The TRC felt this made sense as chlorine has a definition, and TB is already used in the MAHC. There was concern that TB usually refers to tuberculosis, but the TRC felt that it was clear from the context of the sections where it was used that it was not referencing tuberculosis. The TRC recommended a Yes vote on this CR.

**5.7.3.1.1.5-0001**: This CR proposes to change the maximum allowable free chlorine residual from 10 ppm to 5 ppm. It was discussed that this is not reverting back to a former maximum as the CR submitter indicated; the maximum level in the MAHC has always been 10 ppm, and the Annex discussion already addresses use above label instructions. The TRC recommended a No vote on this CR, with one TRC member abstaining.

**5.7.3.1.1.5-0002**: This CR proposes corresponding annex material for CR 5.7.3.1.1.5-0001. The TRC recommended a No vote on this CR since they had recommended a no vote on the proposed code section change.

**5.7.3.4.1-0001**: This CR proposes to change the allowable upper limit for pH from 7.8 to 8.3. The rationale by the CR submitter is that the effect of pH at these levels on chlorine efficacy is less substantial than that of cyanuric acid. The TRC discussed the need to get equipment to measure pH above 8.0 (both LHDs and operators), the fact that the proposed level was significantly higher than the existing, and maybe a more incremental change would be more advisable. The TRC also discussed health effects at higher pH, and that states with higher allowable levels up to 8.2 haven't seen issues, and that some contact lens solutions have pH up to 8.5. The discussion focused on chlorine efficacy and that in states that allow higher levels it is not permitted in spas and a higher free chlorine minimum is required for pH above 7.8, which was not proposed here. The TRC ultimately felt that this was too revolutionary and did not have enough research cited to justify and recommended a No vote on this CR.

**5.7.3.4.1-0002**: This CR proposes changing the lower limit for pH from 7.2 to 7.0. The TRC discussed that there is better chlorine efficacy at lower pH levels, and that other standards used in Europe and elsewhere allow pH of 6.5. The Disinfection and Water Quality TSC recommended a yes vote on the CR. There was concern about voiding equipment warranties when operating at lower levels but there was discussion that warranties usually follow health requirements and one example was given at operating at 7.4-7.6. The TRC felt there should be an addition to Annex language about equipment warranties, but that this was a justifiable incremental change. The TRC recommended a Yes vote on this CR.

**6.6.3.1-0002**: This CR proposes to change the upper level for pH which would constitute an imminent health hazard from 8.0 to 8.5, to go along with the proposed upper limit for pH of 8.3. The TRC discussed that the annex provides rationale for setting the upper limit at 8.0, and the TRC felt that although some states allow pH above 8.0 increasing the upper limit by 0.5 was a significant change, and given that they recommended a No vote to increase the operational limit from 7.8 to 8.3, they felt that for the same reasons changing the IHH level from 8.0 to 8.5 was not warranted. The TRC thus recommended a No vote on this CR.

**6.6.3.1-0001**: This CR proposes to make the following changes to the section on imminent health hazards: Any of the following violations are IMMEDIATE HEALTH HAZARDS which shall require ~~immediate correction or~~ immediate POOL closure: 1) Failure to provide supervision and staffing of the AQUATIC FACILITY as prescribed in MAHC 6.3.4.1; 2) Failure to provide ~~the minimum~~ DISINFECTANT residual levels between the minimum and maximum residuals listed in 5.7.3.1.1.2, 5.7.3.1.1.5, 5.7.3.1.2.2, and 5.7.3.1.2.3 ~~various sections of this CODE~~; The TRC discussed each proposed change, first the removal of the ability for the operator to immediately correct an IHH in order to remain open, which the TRC did not agree with, and second, making exceedance of the maximum free chlorine residual level of 10 mg/L an imminent health hazard. The TRC felt that this would not provide any window for exceedance before closure would be required (for example, one state has a closure level of 15 mg/L) and that that may be a type of future change to consider, but they did not feel that exceeding 10 mg/L would be considered an imminent health hazard. The TRC recommended a No vote on this CR.

**6.6.3.1.2-0002**: This CR proposes the following change: "If pH testing equipment does not measure above ~~8.0~~8.5, pH level must be at or above the highest value of the test equipment." and was intended to accompany the related CRs to change the maximum allowable pH level to 8.3/IHH to 8.5. The TRC recommend a No vote on this CR as they had recommended no votes for the related CRs.

The TRC also briefly discussed updates to the Surf Pools CR 4.12-0001 and Artificial Lagoons CR 4.12.11-0001. There are currently no proposed modifications for the TRC to vote on, and they may end up being issued as interim guidance by CDC. The final vote on these CRs will likely be over email.

The TRC was unable to address the remainder of the CRs on the agenda; some will be moved to the August 10<sup>th</sup> TRC call and others to an email agenda.