Instrumentation Data Integrity Checklist

Portable Colorimeter (Example: Hach Pocket II, DR300, DR800, or DR900 Colorimeters)

- ☐ Appropriate method (or program number) is used for anticipated sample concentration (LR, MR, HR; see Table 1)
- ☐ Appropriate sample volume is used (10 or 25 mL; see Table 1)
- ☐ Appropriate sample cell is used (plastic or glass; see Table 1)
- ☐ Appropriate sample reaction time is used (total chlorine reaction time is temperature dependent; see Table 1 and/or user's manual)
- ☐ Sample cells are clean and not scratched
- ☐ Sample cells are consistently oriented in the appropriate position in the colorimeter (i.e., white diamond consistently faces towards the front of the instrument)
- ☐ Sample cells are consistent material and condition (e.g., visually identical)
- ☐ Instrument cap is securely placed on top of instrument prior to analysis
- ☐ Excess liquid (e.g., condensation) and finger prints are wiped from sample cells prior to analysis with a lint-free cloth
- ☐ Appropriate reagent is used (free or total chlorine; for 10 or 25 mL samples; see Table 1)
- ☐ If a reagent dispenser is used (e.g., Hach SwiftTest kit), confirm that humidity is not causing reagent to clog in the dispenser
- ☐ If a reagent dispenser is used (e.g., Hach SwiftTest kit), confirm that the reagent cartridge is used within 6 months after opening
- ☐ Reagents are not expired
- ☐ Reagent blank value is determined for each new lot of reagent (i.e., replace the sample in the test procedure with deionized water to determine reagent blank value, which will be subtracted from all sample results to account for "baseline" color development). It is recommended that the reagent blank value is written on the package of reagent, including date and operator initials.
- ☐ Separate sample cells are labeled and used for free and total chlorine analysis
- ☐ Colorimeter performance is verified (e.g., Spec Check Secondary Gel Standards, primary standards) at least weekly during routine use or before each use during infrequent use
- ☐ Instrument is using the most current software/firmware (check manufacturer's website)
- ☐ Instrument is re-zeroed at each sample location (if used for distribution system sampling)
- ☐ Instrument is displaying the desired test results (concentration, Abs, %T)
- ☐ Instrument is displaying the desired units (e.g., mg/L as NH_3-N vs. NH_3)
- ☐ Sample cells are rinsed well between samples using deionized water or fresh sample
- ☐ Sample cells are capped and gently inverted prior to analysis (after the reaction time is complete) to remove any bubbles that may have accumulated on the sample cell wall (common issue with plastic sample cells)
- ☐ Samples are not left in direct sunlight (both before and after the addition of reagent)
- ☐ Factory default calibration is not adjusted (unless asked to do so by regulatory agency)
- ☐ Samples are analyzed immediately and are not preserved for later analysis
- ☐ Sample locations are adequately flushed, so that the sample is representative water quality at the desired location (i.e., calculated flush time concept)
- ☐ Plastic containers are not used to collect samples (plastic can have chlorine demand)
- ☐ Operator is following the most recent version of the method procedure (method procedures are updated periodically to improve performance; check manufacturer's website)
- ☐ Operator is aware of potential interferences with reagents (e.g., oxidized manganese can interfere with DPD reagent)

Table 1: DPD Chlorine Method Summary for Portable Colorimeters (Hach Company)

Colorimeter Type	Method Specifications	Low Range (0.02 to 2.00 mg/L)	Mid-Range (0.05 to 4.00 mg/L)	High Range (0.1 to 8.0 mg/L)
Hach Pocket II	Method	Total: 8167 Free: 8021	N/A	
	Cell Type	Glass		Plastic (1 cm)
	Sample Volume	10 mL		5 mL
	Powder Pillow	1 x 10 mL pillow		2 x 10 mL pillows
	Precision	@ 1.00 mg/L ± 0.05 mg/L		@ 5.0 mg/L ± 0.2 mg/L
	Reaction Time	Total: 3 min (varies by temp.) Free: Immediate (< 1 min)		Total: 3 min (varies by temp.) Free: Immediate (< 1 min)
Hach DR 800 Series	Method	Total: 8167 Free: 8021	Total: 10250 Free: 10245	N/A
	Program Number	9	114	
	Cell Type	Glass	Glass	
	Sample Volume	10 mL	10 mL	
	Powder Pillow	1 x 10 mL pillow	1 x 25 mL pillow	
	Precision	@ 1.00 mg/L ± 0.01 mg/L	@ 1.50 ± 0.02 mg/L	
	Reaction time	Total: 3 min (varies by temp.) Free: Immediate (< 1 min)	Total: 3 min (varies by temp.) Free: Immediate (< 1 min)	
Hach DR 900 Series	Method	Total: 8167 Free: 8021	Total: 10250 Free: 10245	N/A
	Program Number	80	87	
	Cell Type	Glass	Glass	
	Sample Volume	10 mL	10 mL	
	Powder Pillow	1 x 10 mL pillow	1 x 25 mL pillow	
	Precision	@ 1.25 mg/L ± 0.02 mg/L	@ 2.10 mg/L ± 0.02 mg/L	
	Reaction Time	Total: 3 min (varies by temp.) Free: Immediate (< 1 min)	Total: 3 min (varies by temp.) Free: Immediate (< 1 min)	