2008 – 2010 NC Triennial Review

NC-PC Review of Proposed Dissolved Metals Standards

Review is based on information known to date

What is the Triennial Review

3 Year Review

- Required by Federal Water Pollution Control Act (Clean Water Act)
- Surface water quality standards (WQS)
- Water body classification
- Review existing variances to WQS
- State and Public participation
- NC Environmental Management Commission (EMC) - Approves

WQS Development

- EPA – National Recommended Water Quality Criteria (NRWQC)
- CWA – Section 303(c)(2)(B) Priority Toxic Pollutants
- State Options:
  - Statewide Numeric Criteria
  - Specific Numeric Criteria
  - Translator Procedure

Proposed 2010 NC WQS

See Handout

Proposed 2010 NC WQS Handout

Proposed Changes to NC Aquatic Life Standards for Metals

B1

All proposed standards are presented as dissolved metals. Current standards are expressed as total recoverable metals.

Hardness dependent metals* are calculated at 25 mg/L hardness (proposed freshwater standards only)

Metal	Current Freshwater [1] Standard: Total (ug/L)	Proposed Freshwater Standards: Dissolved (ug/L)		Current Saltwater [2] Standard: Total (ug/L)	Proposed Saltwater Standards: Dissolved (ug/L)		Additional current standards (ug/L)	
	Aquatic Life	Aquatic Life		Aquatic Life	Aquatic Life		Human [3] Health	Water [4] Supply
	Chronic	Chronic	Acute	Chronic	Chronic	Acute		
Arsenic	50	150	340	50	36	69	10	10
Beryllium	6.5	6.5	65	none	none			
Cadmium*	2/ 0.4 trout	0.15	0.82 / 0.51 trout	5	8.8	40		
Chromium (total)	50	Proposed for removal		20	Proposed for removal			
Chromium III *	none	24	180	none	none			
Chromium VI	none	11	16	none	50	1100		
Copper *	7 (AL)	2.7(AL)	3.6 (AL)	3 (AL)	3.1 (AL)	4.8 (AL)		
Iron	1 mg/L (AL)	Proposed for removal		none	none			
Lead *	25	0.54	14	25	8.1	210		
Nickel *	88	16	140	8.3	8.2	74		25
Silver *	0.06 (AL)	0.06 (AL)	0.30 (AL)	0.1 (AL)	0.1 (AL)	1.9 (AL)		
Zinc *	50 (AL)	36 (AL)	36 (AL)	86 (AL)	81 (AL)	90 (AL)		

* Hardness Dependent Metals: Calculated at 25 mg/L hardness (Applies to Freshwater only)

AL Action Level standards (15A NCAC 02B .0211 and .0220)

[1] 15A NCAC 02B .0211

[2] 15A NCAC 02B .0220

[3] 15A NCAC 02B .0208

[4] 15A NCAC 02B .0212, .0214, .0215 and .0216

March 2010 EMC

Current
WQS Adoption Time Table

- January 10, 2010: DWQ Recommendations to the EMC WQC; Request permission to proceed to the full EMC - EMC-WQC Approved to Proceed
- March 11, 2010: DWQ, request to proceed to Public Notice with proposed changes to surface water quality standards - EMC Approved to Proceed

- January - July 2010: Preparation of Fiscal Note
- August - September 2010: Public Hearings and Comment Period
- November 2010: Review of comments received; Hearing Officers prepare responses and prepare report for EMC
- January 2011: Report and recommendation to EMC. Pending approval by EMC to adopt proposed rule (or a modified version) proposed rule submitted to Office of Administrative Hearing, Rules Review Commission.
- February 2011: Rule reviewed by the Rules Review Commission (RRC).
- March 2011: Potential effective date of rules
- Spring - Summer 2011: Submittal of revisions to US EPA; US Fish and Wildlife Endangered Species Consultation; Request approval of package

Primary Changes

- Significant Lowering Metals Standards
- Dissolved Metals (stream monitoring)
- Total Recoverable Metals (NPDES Permit)
- Hardness dependent metals standards
- EPA hardness conversion factors & hardness dependent calculations
- NPDES Permit Limit Translators

Overall Concern

Compounded Conservative Approaches

- Use of Conservative NRWQC
- Conservative 10th Percentile Statewide Hardness (HUC) (Map)
- Conservative NPDES Approach
- Conservative DWQ Policy

- Being asked to accept std./permit limit we may not be able to meet or accurately measure

Potential Impacts/Concerns

Significant Metals WQS Lowering

(Stream/Ambient)

	Current Chronic Freshwater Standard	Proposed Chronic Freshwater Standard	Decrease
Lead	25.0 ug/L	0.54 ug/L	46 X decrease
Cadmium	2.0 ug/L	0.15 ug/L	12 X decrease
Nickel	88 ug/L	16 ug/L	5.5 X decrease
Copper	7 ug/L (AL - Action Level)	2.7 ug/L (AL)	2.6 X decrease
Zinc	50 ug/L (AL)	36 ug/L (AL)	1.4 X decrease
	Total Metals	Dissolved Metals	

Analytical Detection/Quantitation Levels

	Current Freshwater Chronic Standard	Typical Use Detection Levels	Proposed Freshwater Chronic Standard	Available Method Detection Levels
Lead	25.0 ug/L	10.0 ug/L	0.54 ug/L	0.60 ug/L (EPA Method 200.8)
Cadmium	2.0 ug/L	2.0 ug/L	0.15 ug/L	0.1 ug/L (Std. Method 3113B)

Methods established from National Environmental Methods Index (NEMI)

- NPDES require min. detection and reporting levels
- Current DL are ≤ current standards
- Proposed Cd and Pb std. will be < current Quantitation Levels (QL) (Cd, 1.0 ug/L & Pb, 10.0 ug/L)

Lower Level Interference & Reliability

- Matrix inferences likely to be associated with wastewaters
- Survey of commercial laboratories – Cd and Pb may be susceptible to not being reliable at the proposed detection levels
- We will see what NC DWQ Laboratory Section DL will be for lower standards??

WWTP Removal Efficiencies

- Current analytical QL well above proposed standards – Pb & Cd
- Majority of current metals data < QL
- WWTP do not know true removal capabilities
- Treatment technology/capabilities not known

Reasonable Potential Analysis (RPA)

- Conducted during permit review and modification
- Determines Maximum Predictable Concentration
- Based on 99th percentile 99% probability of WWTP exceeding allowable concentration discharge
- One detection with lower standards & DL could result in permit limit

Receiving Water Impairment?

- DWQ indicates probability of an increase of impaired waters
- Possible 303(d) listing
- >10% exceedence = Cat. 5 listing
- Cat. 5 = TMDL development
- TMDL = Permit limit or other management strategy

Operational Limitations

- Lower metals standards and pro-active nutrient reduction strategies being proposed
- Common treatment chemicals used to increase operational efficiencies and nutrient reduction
  - Metals salts, NaOH, Mag. Hydox., Methanol, etc.
- Chemicals can and do contain trace metals that may place risk in exceeding metals standards at very low concentrations
- Is there a trade off, will risk assessment have to be employed?

What if I get a Permit Limit?

- Chronic WQS = Weekly/Monthly Avg. Limits
- Acute WQS = Daily Max Limits
- Expect weekly sampling requirements

Head Works Analysis
MAHL

- DWQ Policy requires HWA on all pollutants of concern – present or not!
- HWA designed to be conservative
  - 7Q10, ½ DL, Lit. Removal Rates, use of design values
- Lowering of WQS in many cases result in lower MAHL
- SIU status and limits required if pollutant >5% MAHL and WWTP loading >50% for pollutant
- No over allocation permitted
- Ultimately DWQ Approved

Potential SIU Impacts

- NC-PC Conducted Survey and Analysis of 46 WWTP @ 25 mg/L hardness
  - 43% WWTP anticipated to be over allocated for Cd, Pb, and/or Ni with NPDES Permit Translators
  - 80 Pb, 23 Cd, and 7 Ni SIU permits to be affected in survey
- Limited MAIL for metals expected, lower permit limits or non-discharge may result
- Lower Std. will result in lower 5% MAHL threshold. More permitted industry may result

Potential Areas of Relief

- PERCS Unit indicates they are open to evaluate policies
- PERCS Unit continues to offer assistance an help to POTWs
- Clean sampling techniques
- Use of EPA Default Partition Coefficients may help (receiving stream TSS also a factor)
- <50% pollutant MAHL, SIU permit limit not required (current policy)
- Adjustments in SIU permit limits may relieve some over allocation situations

What should you do?

- Review DMR, LTMP, & SIU Data – metals
- Review Ambient Stream Monitoring Data (if available, ask DWQ for closest sampling site/ data)
  - Total Recoverable Metals, Hardness, TSS
- Begin hardness monitoring (if desired)
  - Effluent, Upstream
- Monitor TSS upstream (if desired)
  - Consult DWQ on appropriate location

What should you do?

- Use NC-PC & DWQ tools to help gauge potential impacts
- Conduct HWA with lower standards/permit limits
  (ask DWQ to provide you your exact waste load allocation)
- Notify your Manager/Supervisor
- If there is concern, develop fiscal note for your WWTP and submit during fiscal note development

What should you do?

- Inform potentially affected SIUs for development of fiscal notes with anticipated impacts
- If there is concern, begin developing comments for EMC and Public Comment
- Stay involved! – Extremely important issue

Fiscal Note Development

Items to Consider in Fiscal Note Development

- Domestic Source Over Allocation
- Industrial Source Over Allocation
- WWTP upgrades to meet standards
- Monitoring Costs
  (clean sampling, analytical costs, contracted services)
- Engineering/Special Study Costs
- SIU Permitting Impacts

Resources

- NC DWQ
  - http://portal.ncdenr.org/web/wq
- EPA – Surf Your Watershed
  - http://cfpub.epa.gov/surf/locate/index.cfm
- NC-PC
  - www.ncpretreatment.org
- Other Work/Focus Groups Developing

Open Discussion