

Update of Ambient Water Quality Criteria for Ammonia

74th Annual IWEA Conference

November 16, 2010

Brett Barber



Agenda

- **Background**
- **Current Ammonia Criteria**
- **Draft Updated Criteria**
- **Impact on NPDES Permittees**

Background

- **Current Ammonia Criteria Developed in 1999**
- **Draft Criteria Published 12/30/09**
- **Focus of Draft Updated Criteria**
 - **Aquatic life**
 - **Freshwater**
 - **Larval and juvenile freshwater mussels
(new toxicity data)**

Background

- **Aquatic Life Criteria (Total Ammonia Nitrogen)**
 - **Acute: One-hour average does not exceed CMC**
 - **Chronic: 30-day average does not exceed CCC**
 - **No more than once every three years on average**

Current (1999) Ammonia Criteria

■ Acute:

- 5.6 mg ammonia as N/l @ pH8 and 25° C
- Salmonids present

■ Chronic:

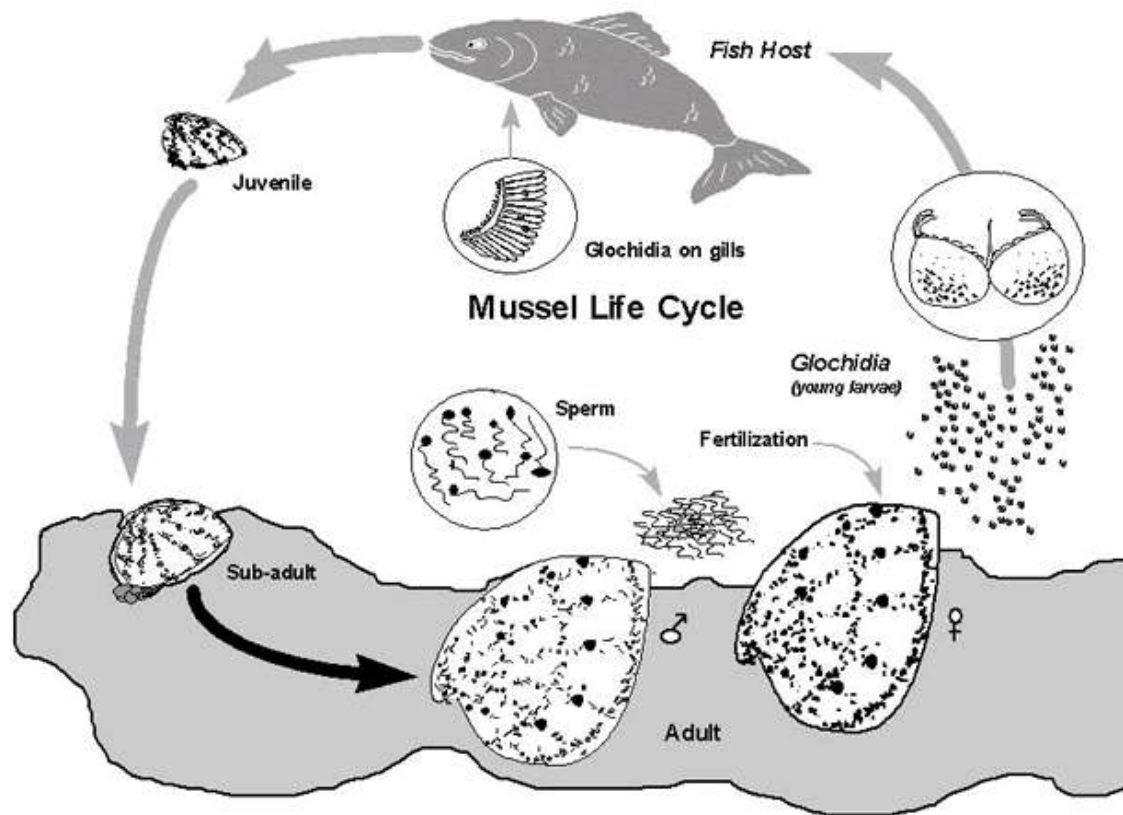
- 1.2 mg ammonia as N/l @ pH 8 and 25° C
- Fish early life stages present

2009 Draft Ammonia Criteria

- **Included Data on Several Additional Species**
 - Snails
 - Fish
 - Unionid mussels
- **Draft Criteria Driven by Unionids**
- **Unionid larvae (glochidia) stage**

2009 Draft Ammonia Criteria

■ Unionid Mussel Life Cycle



2009 Draft Ammonia Criteria

■ Comparison of EPA's 1999 and Draft 2009 Criteria

At Standard Conditions (@ T=25° C, pH=8)	Ambient Water Quality Criteria (AWQC) for Ammonia, mg/L		
	Current (1999)	2009 Update	
		Mussels Present	Mussels Absent
Criterion Maximum Concentration (CMC)	5.6	2.9	5.0
Criterion Chronic Concentration (CCC)	1.2	0.26	1.8

NPDES Permit Impacts

■ Comparison of Current Indiana Criteria and EPA Draft 2009 Criteria

At Standard Conditions @25° C, pH=8	Ambient WQC for Ammonia mg/L		
	Current Indiana (GL Basin)	2009 Update	
		Present	Absent
Acute (CMC)	5.57	2.9	5.0
Chronic(CCC)	1.27	0.26	1.8

NPDES Permit Impacts

- **Effluent Limitation Drivers**
 - Mussels present
 - Summer (warm water) conditions
- **Mussels Present: Anticipate Lowered Limits**
 - Acute: \pm factor of 2
 - Chronic: \pm factor of 5
- **Mussels Absent: Limits Unlikely to Change (anti-backsliding)**

NPDES Permit Impacts: Implementation Issues

- **Are Mussels Present?**
- **Disappeared in Most Indiana Streams**
 - **Urbanization**
 - **Ammonia, other contaminants in runoff**

NPDES Permit Impacts: Implementation Issues

- **How Will IDEM Interpret “Present or Absent”?**
- **Mixing Zones Applicable?**
- **No More than Once/3 Year on Average?**
- **RPE May Become an Issue for Small Dischargers**
 - Lagoons
 - Etc.
- **Future Nutrient (Total Nitrogen) Criteria**

Resources and References

- **Ammonia Aquatic Life Criteria Website –**

<http://water.epa.gov/scitech/swguidance/waterquality/standards/criteria/aqlife/pollutants/ammonia/index.cfm>

Questions?

- **Contact Information:**

bbarber@greeley-hansen.com

317.924.3380