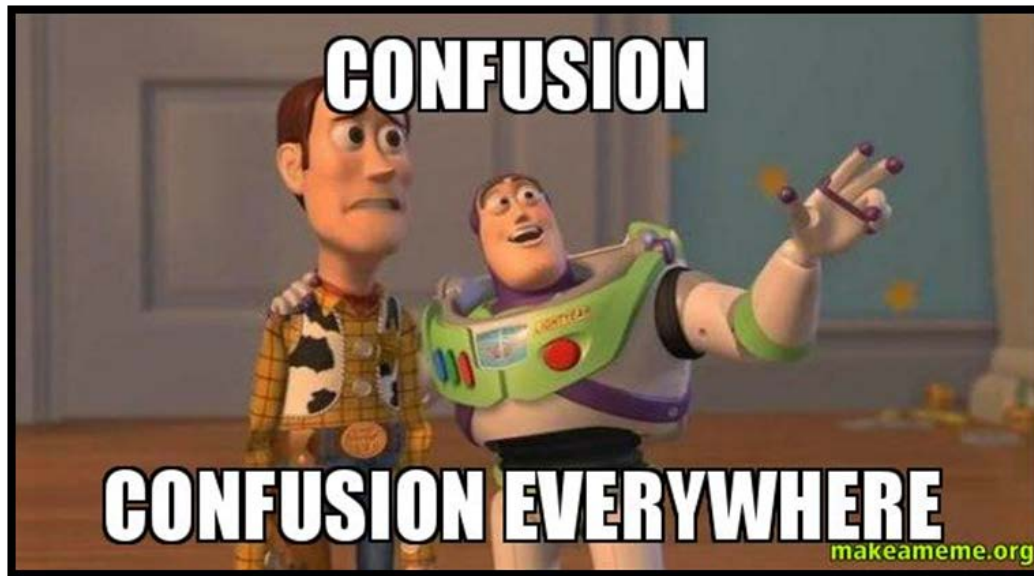


# CLEARING CRITERIA DELIRIA

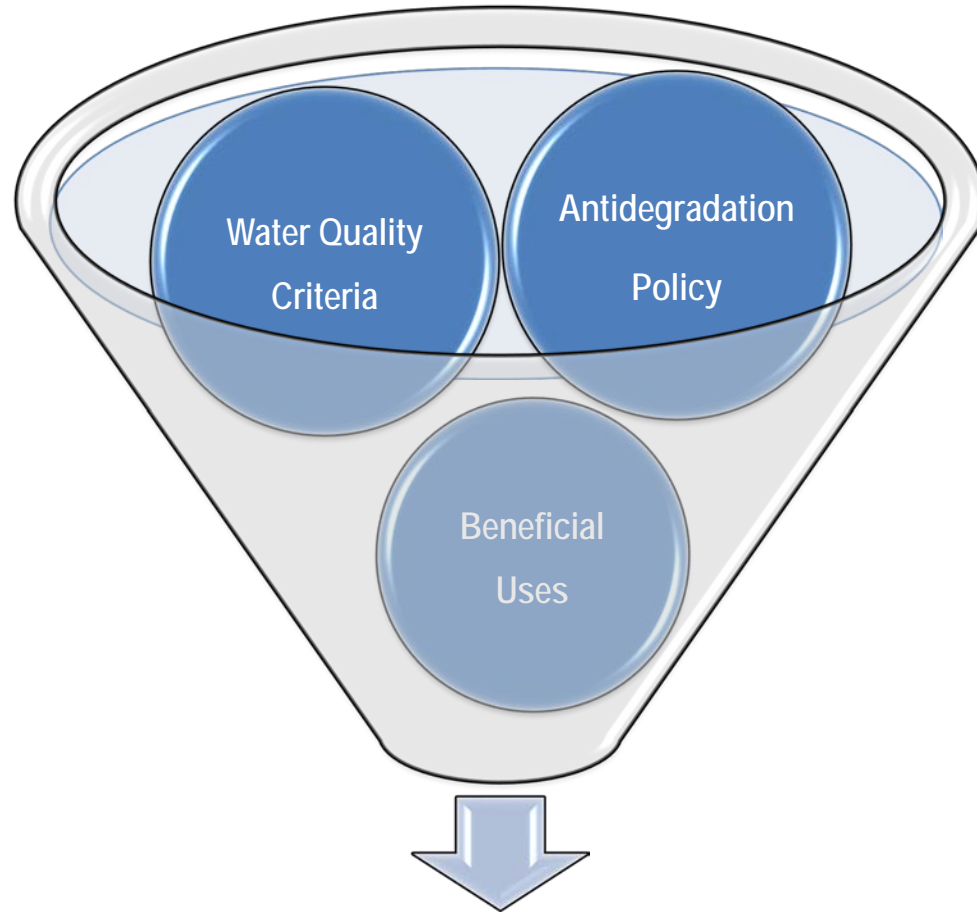
Jade Jones  
Oklahoma Water Resources Board  
April 5, 2018



# WATER QUALITY CRITERIA



# KEY COMPONENTS OF WQS



Water Quality  
Standards

# WHAT ARE WATER QUALITY CRITERIA?

- Constituent concentration, level or narrative statement representing a quality of water that supports a particular beneficial use.
- Water Quality Criteria **MUST**
  - Be based on sound scientific rationale
  - Contain sufficient parameters to protect the designated use
  - Protect most sensitive use
- Types of criteria
  - Narrative
  - Numeric
  - Site-Specific

# NUMERIC CRITERIA

- Minimum concentration of a pollutant that is protective of a particular beneficial use
- Located in OAC 785:45, Appendix G
  - Numerical Criteria to Protect Beneficial Uses
- **Magnitude**, **Duration**, **Frequency**
- Example: Numeric criteria to protect the aquatic life from toxic effects of Chlordane (OAC 785:45, Appendix G, Table 2)
  - Acute (1 hr avg, not to exceed more than once in 3 yrs, on the avg)- 2.4µg/L
  - Chronic (4 day avg, not to exceed more than once in 3 yrs, on the avg)- 0.17µg/L

# NARRATIVE CRITERIA

- Developed where numeric criteria cannot be established or to supplement numeric criteria
- Located in OAC 785:45-5-9
  - General Narrative Criteria
- Example: *Nutrients from point source discharges or other sources shall not cause excessive growth of periphyton phytoplankton, or aquatic macrophyte communities which impairs any existing or designated beneficial use. (OAC 785:45-9(d))*

# SITE-SPECIFIC CRITERIA

- Modified to reflect site-specific conditions such as water chemistry.
- **MUST** protect beneficial uses
- Located in OAC 785:45, Appendix E
  - Options and requirements
  - Metals
- Other Site-Specific Criteria
  - Phosphorous
    - Eucha, Spavinaw (0.01 mg/L)
    - Scenic Rivers (0.037 mg/L)
  - Chlorophyll-a (10 µg/L)
    - Sensitive Water Supply



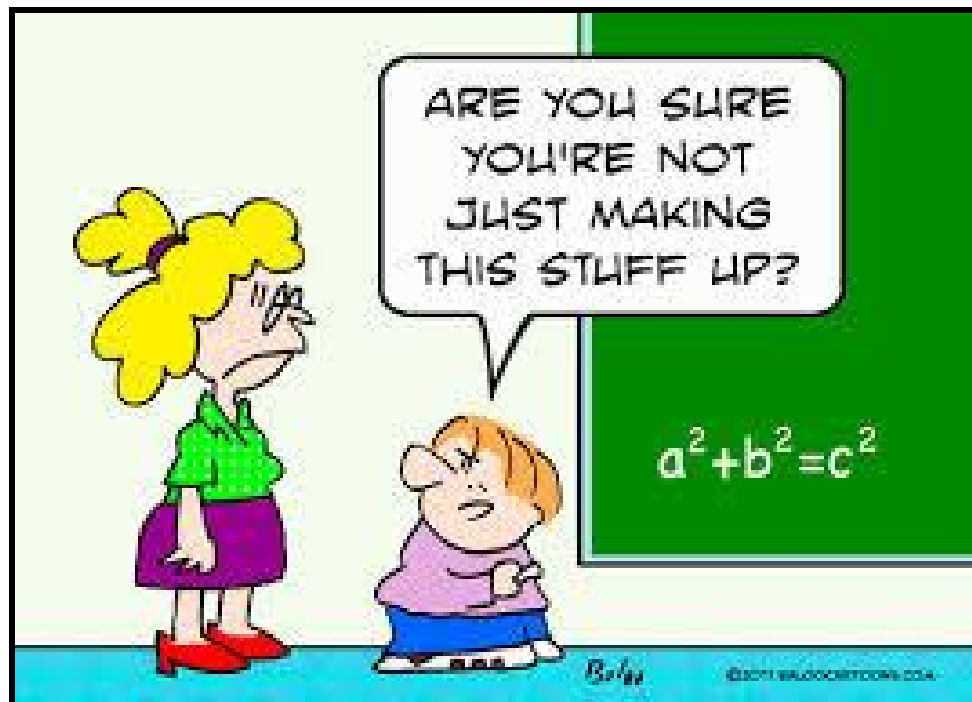
# IMPLEMENTATION

- Water Quality Standards are the foundation of all water quality programs under CWA
- Goal of WQ programs is the protection of beneficial uses through meeting WQ Criteria





# NUMERIC CRITERIA DERIVATION



# EPA'S ROLE IN CRITERIA DEVELOPMENT

- Publishes guidance, methodology, other resources to states
- CWA section 304(a) requires EPA to develop and update water quality criteria reflecting latest scientific knowledge
  - 158 HHC and AL Criteria
    - Derived through risk based assessments
    - Based solely on data and science of pollutant-effect relationship, not economics or technological feasibility
- Use 304(a) criteria, modify 304(a) criteria, or use other scientifically defensible methods
- OK updating HHC using EPA's 2000 HHC Methodology 2015 input values for criteria calculations



# HUMAN HEALTH CRITERIA

- A Human Health Criterion (HHC) is the highest concentration of pollutant that is not expected to pose a significant risk to human health
- Protection from two routes of exposure
  - Consumption of aquatic organisms
  - Consumption of aquatic organisms + water
- Protect public and private water supply and fish consumption beneficial uses
- Why update?
  - Required to review 304(a) criteria
  - Protect the health of Oklahomans



# DATA NEEDS FOR HHC CALCULATION

- Toxicity Values
  - Non-carcinogens
  - Carcinogens
- Risk Level
  - EPA ( $10^{-6}$ ); OK ( $10^{-5}$ )
- Exposure Inputs
  - Fish Consumption Rate (FCR)
  - Drinking Water Intake (DI)
  - Body Weight (BW)
  - Relative source contribution factor (RSC)
- Bioaccumulation factor (BAF) or Bioconcentration (BCF)



# HOW DO YOU CALCULATE HHC?

## Carcinogen Equation

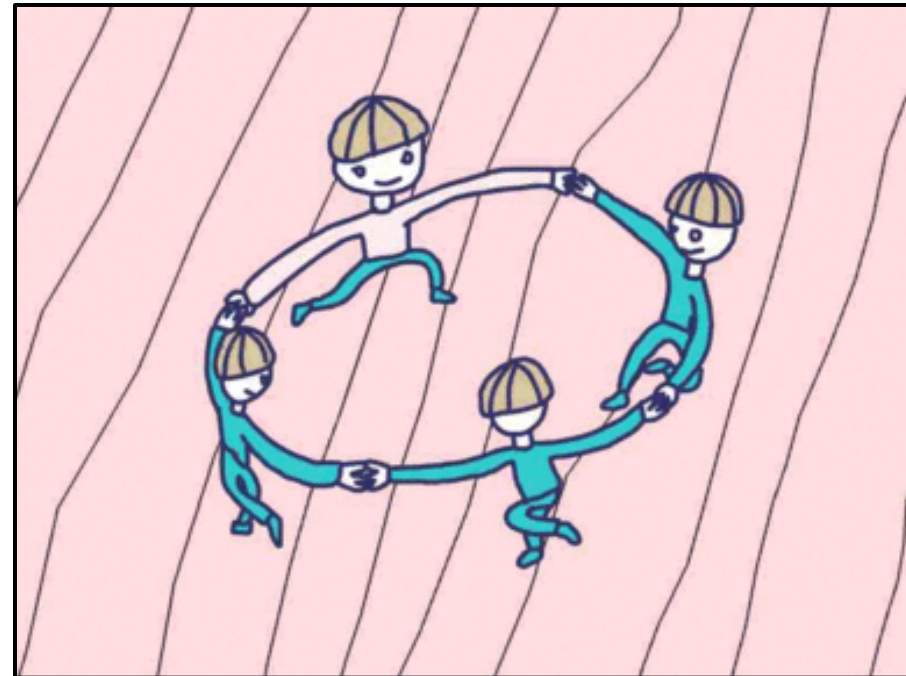
$$AWQC = \frac{(\text{Risk Level} \bullet BW)}{[\text{CSF} \bullet (\text{DI} + (\text{FCR} \bullet \text{BAF}))]}$$

where:

AWQC	=	Ambient Water Quality Criterion (milligrams per liter)
Risk Level	=	Risk level (unitless)
CSF	=	Cancer slope factor (milligrams per kilogram per day)
BW	=	Human body weight (kilograms)
DI	=	Drinking water intake (liters per day)
FCF	=	Fish Consumption Rate (kilograms per day)
BAF	=	Bioaccumulation factor (liters per kilogram)

# 2018 HHC UPDATE

- Currently in the process of scoping OK relevant parameters to be updated
- We encourage public participation!
- Contact WQS staff if you would like to be updated or involved in criteria derivation or rulemaking processes



# QUESTIONS?



## Contact Information

Monty Porter

Phone: 405-530-8933

[monty.porter@owrb.ok.gov](mailto:monty.porter@owrb.ok.gov)

Rebecca Veiga Nascimento

Phone: 405-530-8952

[rebecca.veiga@owrb.ok.gov](mailto:rebecca.veiga@owrb.ok.gov)

Jade Jones

Phone: 405-530-8934

[jade.jones@owrb.ok.gov](mailto:jade.jones@owrb.ok.gov)