

# Proposal to Implement Sub Lethal Effluent Limitations: One Lab's Perspective



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# SeaCrest Group (SCG)

## Origin 1987 (T.H.E Labs)

- Helped develop current Region 8 WET methods in the late 80s and early 90s
- Worked on hundreds of discharge permits and dozens of Toxicity Identification and Reduction Strategies (TIRS)
- Focus on Aquatic Toxicology, Analytical Chemistry, and Environmental Impact Assessment.
- Currently provides service for over 70 clients across the country
- Never failed a Discharge Monitoring Report-Quality Assurance (DMRQA) study

# One laboratories perspective

I am presenting...

- A science based approach
- Only using SCG data and history
- No consideration for profit or politics
- Overall goal is to protect our environment through appropriate regulation

One last thing....

- I don't know everything
- Its not my fault

# Questions to be asked

- Who will be affected if sub lethal limits are enacted?
- Are WET labs able to produce quality sub lethal data?
- Are WET labs able to perform quality sub lethal toxicity inventories and reduction strategies (TIRS)?
- Is sufficient data available to drive sub lethal permit requirements immediately?
- If implemented, how will the new rules be applied?

# Who will be affected if chronic sub lethal effluent limitations for WET are implemented?

- **Chronic Permit Holders (CPH)** - Ex. SCG currently holds 48 chronic permits
- **Those CPH that show consistent SL effects** – Ex. SCG CPH with consist SL effects are 7/48
- **Those CPH that show consistent SL effects and have high In stream Waste Concentrations (IWCs)**- SCG CPHs with IWCs > 60% are 5/7
- **Those receiving new CPs** – Ex. Multiple permit operators
- **Implications:**
  - Small group mostly identified with lethality issues already
  - unknowns for MPO

# Are WET labs able to produce quality sub lethal data?

## I. Within laboratory precision is required

### Monthly reference toxicant testing

– Ex. SCG has had 3 SL reftox failures in 45 months

- *Cerio d./FHM*

- Jan., 2006 - Sept., 2009

- **Implications:**

- Good within laboratory database

- No sharing of data between labs, clients, or agencies

- Potential for between laboratory precision problems

# Are WET labs able to produce quality sub lethal data?-Continued

## II. DMRQAs require SL testing

- Ex. SCG has had acceptable SL evaluations for extent of study (1995-2009)
- SL Acceptability Ranges (AR) are wide
  - 2009: FHM growth AR NOEC 6.25%-50%. *Cerio d.* reproduction AR NOEC 6.25%-25%
  - 2008: FHM growth AR NOEC 12.5%-50%. *Cerio d.* reproduction AR NOEC 12.5%-50%
  - 2007:FHM growth AR NOEC 12.5%-50%. *Cerio d.* reproduction AR NOEC 6.25%-50%
- **Implications:**
  - AR suggests: High potential for false positive or false negatives
  - AR suggests: High potential for between laboratory precision problems

# Are WET labs able to produce quality sub lethal data?-Continued

## III. Between laboratory precision

- Ex. SCG participated in a Water Environmental Research Foundation (WERF) Assessment in 2006-2007.

“Evaluation of WET testing as an Indicator of Aquatic Health in Effluent Dominated Streams”-2007

- Participants:

- 6 facilities
- 4 east/2 west in 5 different states in 4 different EPA regions
- Instream Waste Concentrations (IWCs) > 60%
- 6 WET labs

- **Implications:**

- High levels of within laboratory precision on lethality data
- Moderate levels of within laboratory precision on SL data
- Low levels of between laboratory precision on SL data

# Are WET labs able to perform quality sub lethal toxicity inventories and reduction strategies (TIRS)?

- Many WET labs competent in TIRS for lethality
- SCG has no experience with sub lethal TIRS
- No acceptable, peer reviewed methods specific to sub lethal TIRS have been identified
- Complexity of toxicants at the ppb level (additive potential, emerging contaminants) unknown
- Toxicity spikes and spontaneous disappearance issues amplified
- Analytical confirmation of toxicant more difficult
- **Implications:**
  - It is unclear that a successful TIRS can be conducted unless the toxicity signal is very persistent (over time, concentration).

# Is sufficient data available to drive sublethal permit requirements immediately?...

No, unless methods are modified significantly from current lethality methods.

- These concerns are addressed by agencies in other regions enacting SL limits through Reasonable Potential (RP) for impact analysis
  - Historical persistence over time (# of tests must have shown persistent SL toxicity over a set time)
  - Significant concentrations SL toxicity witnessed (Ex. of those showing persistent SL toxicity they must also show significant SL toxicity at some significant concentration)
  - Potential for removal from rules if success is shown (ex. 3 years without SL violations)

# If implemented, how will the new rules be applied?

- Will historical facility WET data trends be examined or will SL rules be applied to all new CPH?
- How will facilities that have no historical SL chronic data be treated? Multiple CPH?
- Will methods for lethality be used or will there be new methods or modifications specific to SL toxicity?
- If new methods are applied, how will they deal with:
  - Characterizing toxicant persistence over time?
  - Choosing significant toxicant concentrations for testing?
  - Identifying false positives?
  - Increasing laboratory precision (within/between)?
  - TIRS?

# The BIG question

“Is Region 8 behind the rest of the country on the subject of sub lethal regulation thus allowing further degradation of its most precious resource (Water).....and/or..... Is there insufficient data, limited methods, and limited WET laboratory expertise to implement the proposed rules without further investigation?”

# Questions or Comments

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