How TCEQ Water Quality Data is Used in Water Program Permitting

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Thank You!

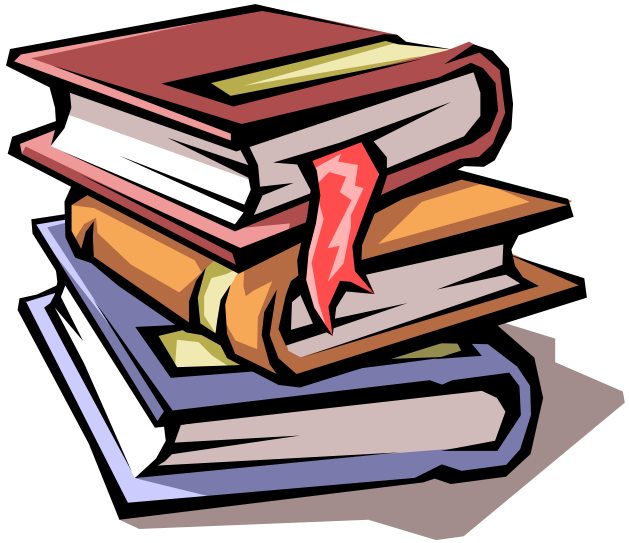
* For collecting water quality and quantity data
* For ensuring that the data are of high quality
* For enabling the TCEQ to write better permits based on actual environmental conditions
* For enabling the TCEQ to make better rules

TCEQ Water Permitting Programs

* Wastewater permits – Water Quality Division
* Water rights permits – Water Availability Division

Wastewater Permits

* Permit applications go through multiple technical reviews:
  * Standards
  * Critical Conditions
  * Dissolved Oxygen (DO) Modeling
  * Water Quality Screening:
    * Toxics
    * pH
    * TDS, chloride, and sulfate



Standards Review

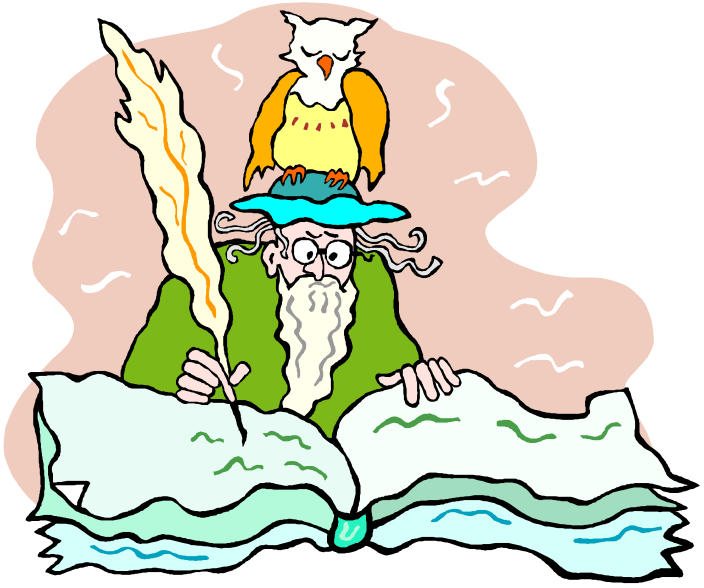
* Uses and criteria – established in 30 TAC 307
* Antidegradation – no impairment of existing water quality uses (Tier 1), water quality maintained (Tier 2)
* Nutrient screening – total phosphorus, chlorophyll *a*, secchi depth

Critical Conditions

* Critical flow and mixing conditions
* Targeted flow measurement locations
* Diffuser modeling – salinity (conductivity, TDS) and temperature

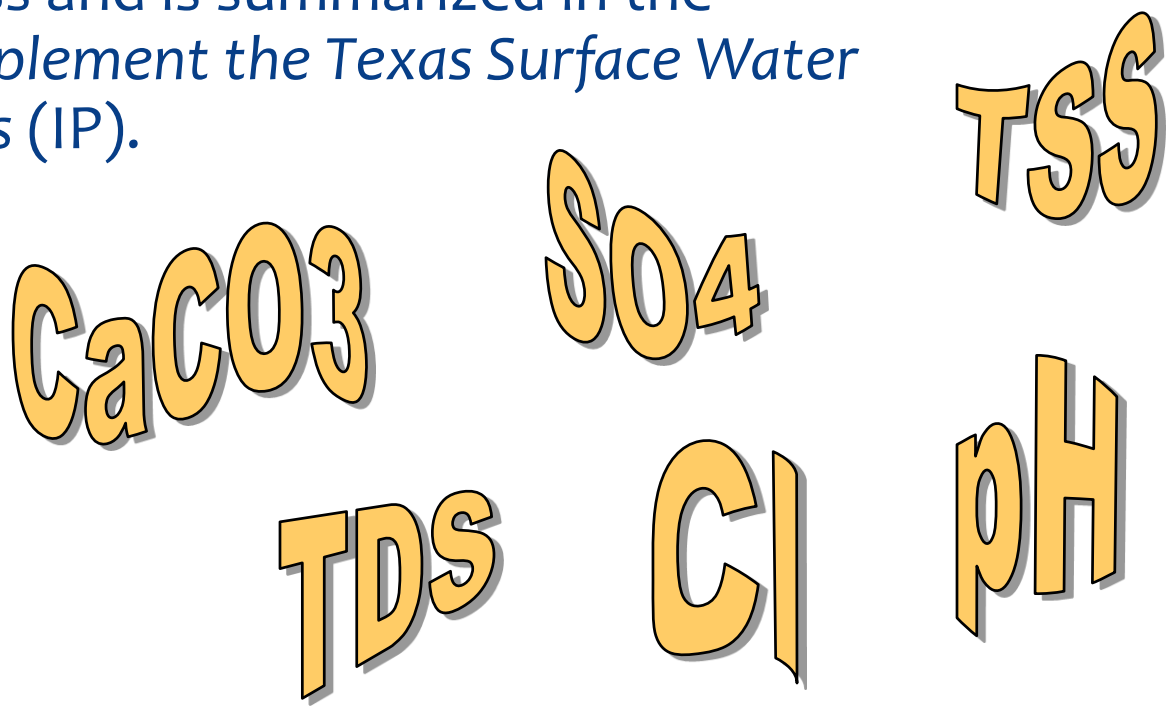
DO Modeling

* Dissolved oxygen
* Temperature
* Chlorophyll *a*
* Salinity (conductivity, TDS)



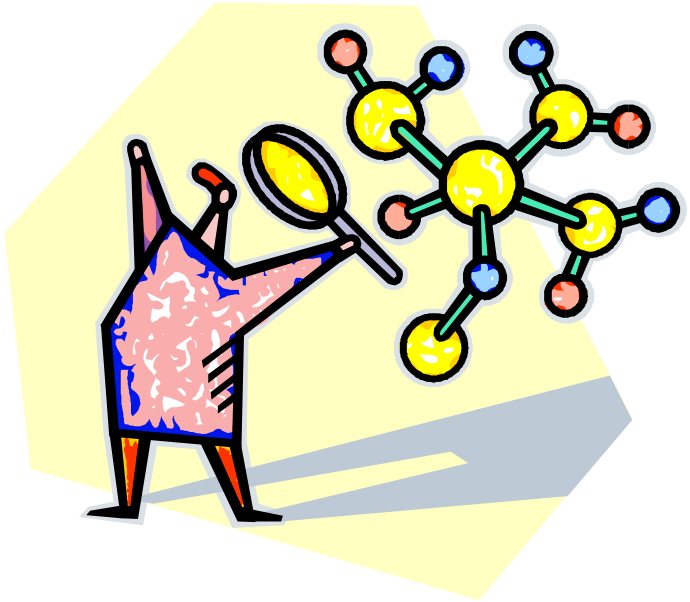
Water Quality Screening

* Ambient data for each segment is used in the screening process and is summarized in the *Procedures to Implement the Texas Surface Water Quality Standards* (IP).
  * TSS
  * pH
  * Hardness
  * TDS
  * Chloride
  * Sulfate



WQ Screening - Toxics

* Permit writers use an Excel spreadsheet (TEXTOX) to determine whether a permit needs to have limits or monitoring on any toxic pollutants.
  * Aquatic life criteria – 30 TAC 307, Table 1
  * Human health criteria – 30 TAC 307, Table 2



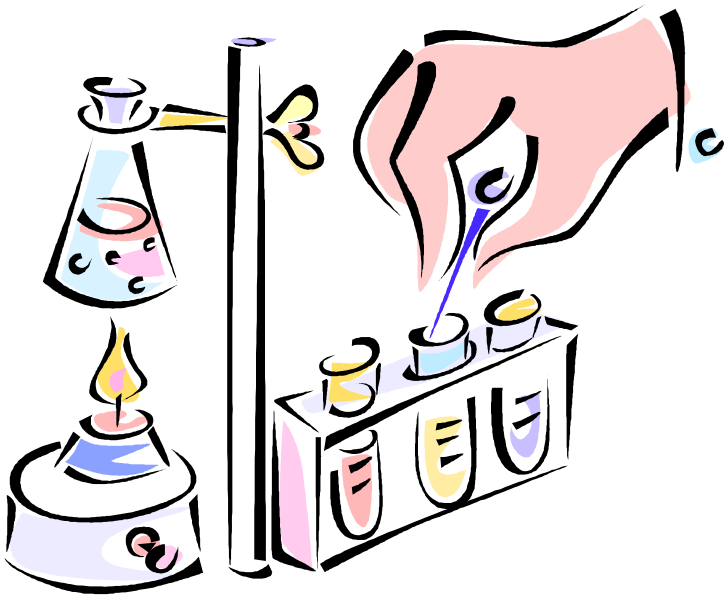
WQ Screening – Toxics – TSS

* TSS is used to determine how metals partition between the dissolved (bioavailable) and total forms for:

  * Arsenic
  * Cadmium
  * Chromium
  * Copper
  * Lead
  * Mercury
  * Nickel
  * Silver
  * Zinc

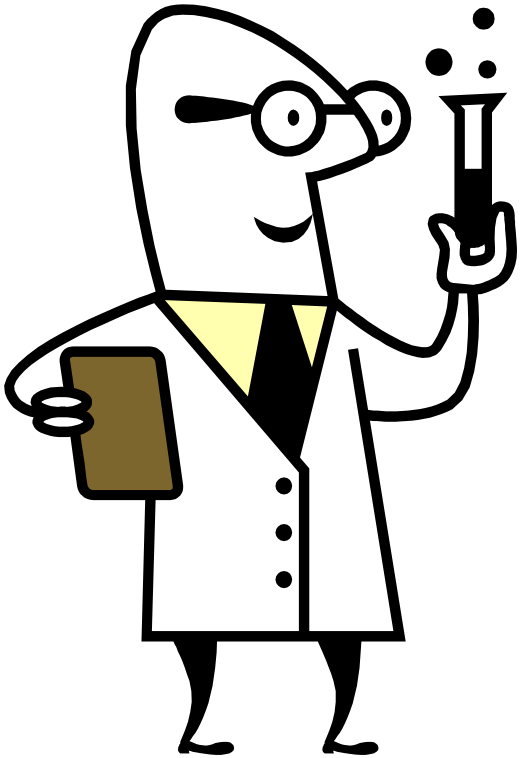
WQ Screening – Toxics – Hardness

* Freshwater aquatic life criteria for the following metals depend on the hardness of the receiving water:
  * Cadmium
  * Trivalent Chromium
  * Copper
  * Lead
  * Nickel
  * Zinc



WQ Screening – Toxics – pH and Chloride

* pH is part of freshwater aquatic life criteria for pentachlorophenol
* Ambient chloride concentration is used to translate free ionic silver criterion (freshwater) to a total silver permit limit



WQ Screening –pH

* Ensure that permit limits for pH will maintain pH standards in receiving water
* Alkalinity also part of pH screening calculations – will likely be included in future IP

WQ Screening – TDS, Chloride, and Sulfate

* Determine whether permit limits are needed for TDS, chloride, or sulfate
* Determine whether monitoring is appropriate

Water Rights Permits and Programs

* Water quality data is or has been used in the following water rights programs:
  * Environmental reviews of water right applications
  * Environmental Flows rulemaking (SB3) – effects of proposed stream flow standards on water quality
  * Instream Flows program (SB2) – studies and analyses to determine flow conditions in rivers and streams necessary to support a sound ecological environment