SYMPOSIUM Diving Deep into Winery Water Usage and Treatment

OREGON

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Water and the Winery

- Water is precious, limited, and regulated
 - Water use is an important sustainability metric
 - A typical winery uses 3-10 gallons of water per gallon of wine produced
 - 15k case winery @ 6 g/g: 214,020 gallons water annually!
- Regulations are increasing
 - Changes to municipal handling limits and standards for discharge locally
 - Carlton, Dundee, McMinnville
 - Washington State: Winery General Permit (2019-2024)
 - California: Winery Water Order (2021-)
 - Tiered winery permitting systems, regular monitoring, inspection and analysis
 - Standards based on discharge method and specifics of location





Why control wastewater parameters, it's "just" wine?

- Damage soil and crops
- Kill aquatic life
- Contaminate surface water and/or groundwater
- Degrade infrastructure in municipal treatment plants
 - Kill microorganisms
- Overwhelm municipal treatment resources
- Not just wine...also cleaning chemical residues and processing agents







Improve Winery Water Use:

- Use less water!
 - Up-to-date protocols and tools
 - Track water use across cases produced
- Reduce solids and chemistry in process water
 - Lees handling/filtration/collection service
 - Reuse and/or update cleaning chemicals
- Reduce the impact of wastewater
 - Neutralize pH
 - Remove solids
 - Digest nutrients before discharge (biological system)
 - Discharge to a controlled environment or better yet, filter and reuse







Some Definitions:

- pH
 - Expression of acidity or alkalinity of a solution
- DO: Dissolved oxygen
 - Amount of oxygen present in a solution
- TDS: total dissolved solids
 - · Combined total of organic and inorganic compounds present in a liquid
 - All non-water molecules
- TSS: total suspended solids
 - Dry weight of undissolved particles that can be trapped by a filter (>2 microns)





How much oxygen does it take for microorganisms to consume the nutrients in wastewater?

• BOD: Biological Oxygen Demand

- The amount of oxygen needed for microbes to biologically oxidize a wastewater sample under aerobic conditions in 5 days at 20C
- Measured as mg/L, can calculate out to pounds based on flow
- COD: Chemical Oxygen Demand
 - Amount of oxygen required to chemically oxidize the total organic matter in a sample
 - Quicker test, can correlate to BOD
 - Measured as mg/L



