BREAKING IT DOWN.

What's the **RIGHT TREATABILITY TEST** for your Industrial Wastewater Project?

First things first.

Why treatability test?

- Reduce risk. Save time. Save money.
- Gain confidence that a design or treatment process will perform
- Troubleshoot performance issues in existing plants
- Identify potential issues before implementing changes
- Confirm "proof of concept"
- Determine fate of pharmaceutical actives and microconstituents

It's not the same.

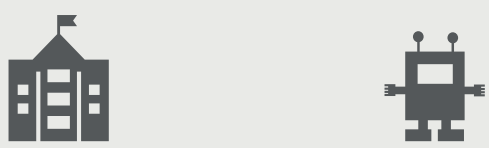
INDUSTRIAL vs. MUNICIPAL

Why industrial wastewater is unique.

- High strength nutrients and salts
- Variability
- Biodegradable and non-biodegradable fraction
- Formation of treatment byproducts and intermediate chemicals
- Presence of toxic and inhibitory compounds
- Inorganic salts and toxic metals
- Hydrocarbon and fatty acid based oil and grease
- Clean-in-place cleaning chemicals
- Chemical compounds contributing to the COD
- Chemical spills and shock loads to activated sludge
- Nutrient deficiency including micronutrient
- Microconstituents

Who does treatability testing?

It depends on your goals & specific test protocol.



Why HDR is different.

At HDR, we've been partnering with clients to perform treatability analysis in our environmental laboratory for over 35 years. Take that hands-on skill and mix it with decades of wastewater engineering experience, and you can see why we're eager to share what we've learned with clients like you. Our lab is run by more than 20 scientific minds with expertise in field monitoring programs, fisheries biology and water quality/wastewater treatability.

Want to learn more?

Get in touch with Joe Cleary
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So, which test?

BIOLOGICAL:

Aerobic

- Initiated with seed sludge from a full-scale plant
- Minimum of 3 sludge ages after initial sludge acclimation period
- Typically a period of 2-3 months
- Laboratory at bench-scale, or pilot study at the plant

Anoxic

- Dentrification
- Control of filiaments

Anaerobic

- Performed with seed sludge from existing full-scale processes
- COD loading rates based on nature of waste
- Biogas production monitoring

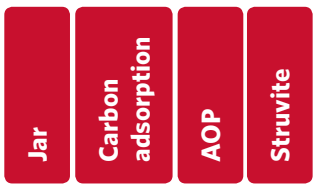
BIOLOGICAL TESTING

PHYSICAL/CHEMICAL:

Develop design criteria or improve current plant optimization & performance.

- Sludge handling processes simulated at bench scale
  - Anaerobic and aerobic sludge digestion
  - Sludge dewatering
  - Composting
  - Sludge stabilization processes
- Jar test for chemical precipitation
- Carbon adsorption isotherms and column tests
- Advanced oxidation processes (AOP) testing with UV light, hydrogen peroxide & ozone

PHYSICAL/CHEMICAL TESTING



Let's see some of these tests in action.

Read the specifics of how treatment concerns were addressed in

3 CASE STUDIES.

2 Confirmed TREATMENT PROCESS EFFECTIVENESS.

- **Pyrethroid Working Group**
- **POTW**

1 Showed the process JUST WASN'T FEASIBLE.

- **Pharmaceutical**