Microbial Communication Service™ Monitoring Points in Wastewater Treatment Plants

To Optimize Efficiency of Plant Operations and Minimize Operational Costs

Our Service Points

1 Influent to Biological Reactor

- Organic load assessment - short term BOD (2 to 10 hours)
- Evaluate the impact of a significant industrial discharger on operations (Determine specific degraders and assess the impact of the waste load)
- Evaluate impact of shock loads
- Conduct bench scale biofeasibility studies to determine treatability/toxicity of potential wastes or chemicals

2 During Biological (Aerobic or Anoxic) Treatment

- Determine fingerprint of waste biodegradation
- Determine the F: M ratio
- Measure oxygen demand - optimize O_2 uptake
- Determine if nitrifiers are active
- Assess activity of denitrifiers in anoxic reactors
- Determine biomass activity

3 Sludge to Digestion

- Assess sludge biodegradation potential (aerobic or anaerobic)
- Evaluate methane potential for anaerobic treatment
- Evaluate oxygen requirements for aerobic digestion

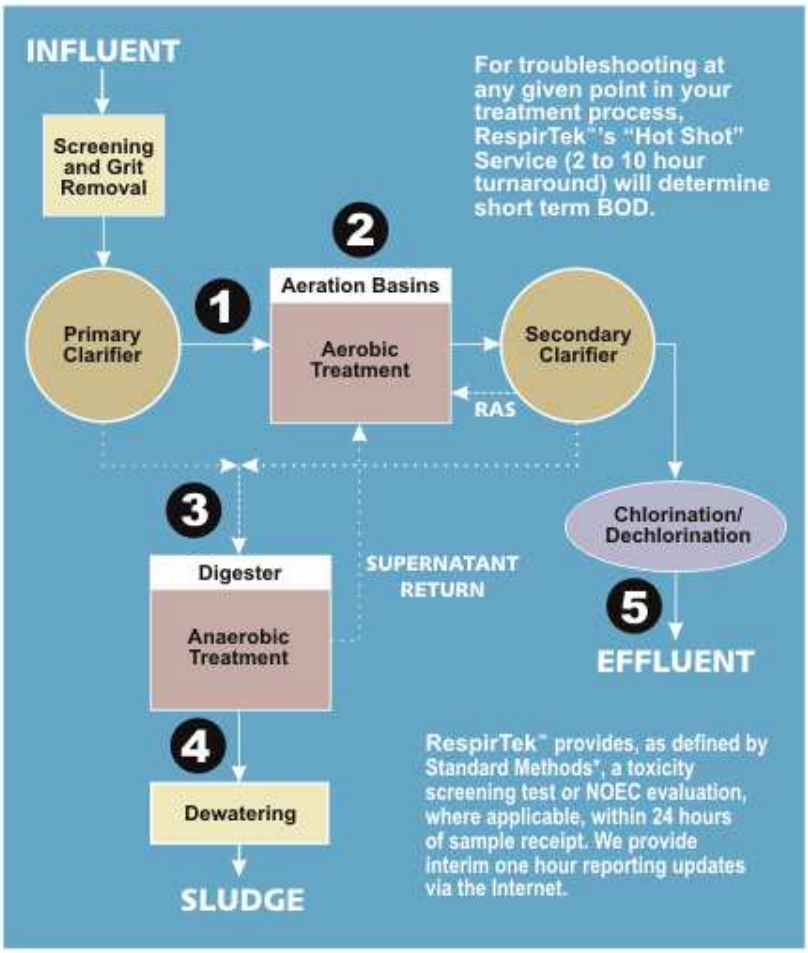
4 Digested Sludge

- Monitor the residual activity of aerobic/anaerobic microbes
- Evaluate overall sludge treatment process performance
- Check for undegraded waste constituents
- Evaluate the natural attenuation of waste sludge for land application or
- Toxicity for disposal options

5 Wastewater after Chlorination/ Dechlorination

- Impact on NPDES discharge point
- Permit compliance

RespirTek™'s Microbial Communication Service™ can assist with beneficial information at each Monitoring Point to aid in optimizing efficiency of plant operations and in minimizing operational costs.



*Standard Methods for the examination of water and wastewater:

- Toxicity Screening Test to determine if an impact is likely to be observed when the testing design incorporates one concentration, multiple or replicates, when exposed for 24 to 96 hours.
- No Observed Effect Concentration (NOEC) – NOEC evaluation in a full or partial-life-cycle test, the highest toxicant concentration in which the values for the measured response are not statistically significantly different from those in the control.

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RespirTek™ is a contract environmental laboratory with extensive services in respirometry from biological to chemical – biofeasibility in bioremediation to treatability/toxicity in wastewater treatment plant applications. We provide a unique, cost effective, useful service to our clients who are involved in any area where the activity of microbes or the response to chemicals is significant in their specific process of concern.

RespirTek™ can assist you whether you are involved in municipal, industrial or private sector wastewater treatment plant operations or you are a research-consulting engineer considering bioremediation alternatives. RespirTek™ offers 3rd party validation for use with regulators or other stakeholders. If considering purchasing a respirometer, utilize our experience with respirometers with your particular sample to get a step closer to knowing what respirometry can do for you.

RespirTek™ is the only laboratory to offer **Microbial Communication Service™**. We communicate with microbes, through Respirometry, by continuously monitoring their behavior through their respiration rate, analyses of the patterns of oxygen uptake or gas production and adjunct analytical testing. The methodology used in the service is fully acceptable to EPA, ASTM, OECD and Standard Methods.

Our lab is equipped with the most advanced respirometers and testing equipment available and a staff of experts unsurpassed by any other. Our president and co-founder, a Biologist, has 23+ years of experience working with various respirometers in both industrial labs and wastewater treatment plants. In addition, we retain a Ph.D./P.E. who is one of the nation's foremost experts in the field.

What was once only offered at the university research level, RespirTek™ now offers to the environmental industry a very cost effective service combined with highly responsive customer service. Individual testing programs are designed to fit the project because we understand no two projects or processes are exactly alike.

Our Services Include:

Wastewater Treatment Plant Evaluations

- Provide parameters that allow you to optimize plant control
- Evaluate the impact of Significant Industrial Dischargers (SID) on plant operations and performance
- Troubleshoot operational or permit compliance problems
- Reduce potential for future process failure

Biodegradation Process Selection

RespirTek™ can assess the biodegradation characteristics of specific chemicals. First we determine whether an aerobic or anaerobic system would work best to treat the contaminant. We then set up a project-specific test plan to confirm the applicability of the chosen system. We can ascertain the need for enhancements or augmentation in both volume and rate determinations.

Biofeasibility and Bench Scale Studies – our research work saves months of development time and eliminates critical uncertainties from your decision-making process.

- **Wastewater Treatment Plant Process Design**
- **Bioremediation**
  RespirTek™ has developed protocol for a basic biofeasibility study, using respirometric technology combined with traditional analytical testing, that provides a very economical approach to bioremediation determination. We can determine the rate of contaminant degradation to regulatory levels within days versus months and years of testing.

In conclusion, RespirTek™ provides well-planned test designs, timely project execution, concise reports with accurate data, dependable test results, and expert interpretation of the data utilizing 50 years of combined chemical and biological experience. Each client receives a project report consisting of test results, volume and rate bio-graphs, and analytical comparisons showing final results and variances.

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