

PolySeed[®]

Technical Report

Hot Weather Effects

Question:

Does hot weather affect BOD₅ results?

Answer:

The answer to this question depends on the source of the sample. If the sample source is from a pond treatment system, yes, hot weather will affect test results. If the sample source is effluent from an activated sludge treatment system, no, the hot weather will have little to no effect on the test. Hot weather effects on each system are as follows:

Pond Treatment System:

1. Effluent will contain more algae in the summer than it does in the cooler winter months and the pH will need to be neutralized which will destroy most of the algae in the sample.
2. Remaining algae will begin to die off once the dilution(s) are placed in the incubator.
3. The destroyed and dying algae release organic components (organic carbon) into the water column and the bacteria seeded into the dilutions will oxidize the carbon, resulting in an elevated BOD.
4. The resultant BOD is the combination of two sources of organic carbon: one from the natural organic carbon present in the water tested and one that is ADDED by the carbon released by the algae as they die off during the 5 day incubation period.

Activated Sludge Treatment System:

1. Due to the flow's mechanical movement through the plant, the Mean Cell Retention Time (MCRT) is approximately 9 to 15 days which results in less algal biomass.
2. Due to this mechanical movement and the process of required plant chlorination and de-chlorination, there will be no algal growth in the effluent when discharged.
3. Once the sample is collected at the outfall, the testing collected on that effluent is the same as the testing on the pond system effluent with the exception that none of the adverse effects from the pond system would be applicable to the activated sludge system.
4. From this point on in the testing procedure, BOD₅ test results would be attributed to the organic carbon source in the sample matrix only.

NOTE: *If your waste treatment facility consists of a pond system and you experience these types of seasonal upsets, it is recommended that you contact your local field office to notify them of the special procedures used for these samples and of their inclusion in the lab's SOP manual. If the lab used is a contractual facility, the permitted treatment system must have copies of the SOPs used, a copy of the lab's NELAC Accreditation and the lab must be inspected at least once per year or whenever accreditation is renewed. The Q & A above has been provided by Terry Mills, BOD Consultant and BOD Standard Methods Committee Member.*