

Where the Rubber Meets the Road;

When the (Lab) Sheet Hits the Fan.

by Sherry Bock & Jennifer Thoreson

Your facility has been operating without any issues and you never have problems with your biosolids so why look at your lab reports right away? Well, it could save you from a potential enforcement action! Don't let your guard down and assume your results (both for your biosolids analysis and your soil samples) will always be o.k. Take a look at the analytical report below. Can you tell us what is wrong with the lab information provided below?

| Parameter | Result | Units | LOD | LOQ/RL | Dilution |
|-------------------------------|-----------------|-----------------|---------|---------|----------|
| Inorganic Analysis | | | | | |
| Total Kjeldahl as N | 5.15 | % dry | 0.00475 | 0.0180 | 250 |
| pH, Lab | 6.83 | pH Units | | | 1 |
| Phosphorus, Total as P | 1.69 | % dry | 0.0003 | 0.00110 | 250 |
| % Solids | 2.23 | % by Weight | | | 1 |
| Total Volatile Solids | 73.8 | % by Weight | | | 1 |
| Metals Analysis | | | | | |
| Arsenic, Total | <86.0 | mg/kg (dry wt.) | 86.0 | 258 | 5 |
| Cadmium, Total | <68.7 | mg/kg (dry wt.) | 68.7 | 206 | 5 |
| Copper, Total | 568 | mg/kg (dry wt.) | 34.3 | 103 | 5 |
| Lead, Total | <68.7 | mg/kg (dry wt.) | 68.7 | 206 | 5 |
| Mercury, Total | 2.10 | mg/kg (dry wt.) | 0.093 | 0.280 | 1 |
| Molybdenum, Total | <34.3 | mg/kg (dry wt.) | 34.3 | 103 | 5 |
| Nickel, Total | <34.3 | mg/kg (dry wt.) | 34.3 | 103 | 5 |

If you answered nothing, take a closer look. There are concerns that, if not resolved, could end up in enforcement.

Note that there are several 'less than' ("<") values for the metals. 'Less than' does not mean nothing is there. Take a look at arsenic. Arsenic is reported as <86 mg/kg. Do you remember what the ceiling limit is for arsenic? 75 mg/kg. The result is 11 mg/kg over the ceiling limit. However, if we look a little closer at the <86 mg/kg value reported we will notice that the lab reported down to the method detection limit, which is not acceptable for compliance reporting. This is something to pay close attention to because compliance results reported as less than detection are to be reported in terms of reporting limit, not method detection limit per NPDES Permit requirements. In this report, the reporting limit is 258 mg/kg which would now be 183 mg/kg over the ceiling limit.

What about Cadmium and Molybdenum? If you just look at the report and use the less than values, you will think you are o.k. Remember though, the RL is what NPDES Permits (see permit language below) require, so you must use that

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Reading Your Lab Reports Continued

value. For Cadmium the RL is 206 mg/kg, which is 121 mg/kg over the ceiling limit (85 mg/kg) and Molybdenum's RL is 103 mg/kg, which is 3 mg/kg over the ceiling limit (100 mg/kg).

Permit Language for Detection Level:

Detection Level. The Permittee shall report monitoring results below the reporting limit (RL) of a particular instrument as "<" the value of the RL. For example, if an instrument has a RL of 0.1 mg/L and a parameter is not detected at a value of 0.1 mg/L or greater, the concentration shall be reported as "<0.1 mg/L." "Non-detected," "undetected," "below detection limit," and "zero" are unacceptable reporting results, and are permit reporting violations. (Minn. R. 7001.0150, subp. 2, item B)

What can you do? **READ YOUR LAB REPORT AS SOON AS YOU RECEIVE IT!** That is the best thing you can do. If you notice issues like this or if you have any other questions, contact your lab right away. Communication is essential. If you address it immediately, more than likely they still have your sample and may be able to re-run an analysis. If after you have talked with your lab and are still having issues, then call either Sherry Bock or Jennifer Thoreson.

Remember every sampling event takes planning. Make sure you know what you need to sample for, what units you need your results in, what the holding times are, what reporting levels you need, and what you are going to do if an analysis issue arises. Be sure to allow enough time in-between for these unplanned issues. Here are a few things that you can ask your lab should you receive results like the example depicted above:

- Ask the lab if it is possible to reprocess your sample with lower reporting limits to meet your needs.
- Ask for a revised report to include sample results with less than values to be reported to the reporting limit instead of the method detection limit.

Contact information is:

Sherry Bock, 7678 College Road South, Suite 105, Baxter, MN 56425, 218-316-3882, sheryl.bock@state.mn.us

Jennifer Thoreson, 520 Lafayette Road, St. Paul, MN 55155, 651-757-2805, Jennifer.thoreson@state.mn.us

