

## ***Biosolids Business***

By Jorja DuFresne



### ***Continuing Down the Road of Recordkeeping.....***

Continuing on with recordkeeping, let's move now into the records that must be kept to show compliance with the various options for meeting vector attraction reduction [VAR] requirements. As with pathogen reduction, a lot of details do not come in with annual reports for VAR and the detailed records should be available during inspections [and readily accessible for an unannounced inspection as well]. Once again, these records will back up the information that is given on the annual reports and document operating conditions.

**Option 1. Meeting a 38% volatile solids reduction [VSR] through a treatment process.** With this option, records should demonstrate that the volatile solids being fed to the digester are reduced by at least 38% over the treatment or treatment and storage process. Records of the total and volatile solids of the feed, decant [if applicable], and biosolids product must be kept. I would suggest samples be taken at least once a week with a focus on really getting representative samples for particular operating conditions. Records of and time of doing the calculation is dependent on a couple of things. One is your required frequency for testing and the other is that “apples must be compared to apples” or a better yet the “apples to applesauce” – apples being the feed and sauce the product. This being the case, you will have to decide on the timing of doing calculations with specific sets of data. In addition, remember to choose the right formula for operating conditions. Revisit Chapter 4 of your Biosolids Manual if need be. Lab sheets should be available to ensure total and volatile solids were done by SM2540G.

**Option 2. Bench Scale Test for Anaerobically digested biosolids.** Records for this option would start with the sample date, location, and starting time of the test [keep anaerobic and start within 6 hours]. Details of the set up can be found in your Biosolids Manual VAR appendix. Lab records of the test controls of the additional digestion must be kept – maintenance of temperature, swirling every day to keep the solids mixed. Records should show that the total and volatile solids are determined on the whole samples from the flasks by SM2540G after 20 days and 40 days. The calculation of VSR can be done using the Van Kleeck formula and should show that VSR is less than or equal to an additional 17%.

**Option 3. Bench Scale Test for Aerobically digested biosolids.** As above, record the sampling and set up of the test as well as lab operating conditions during the test including the temperature of the solids. This test is conducted at 68 degrees F even if the solids are digested at a different temperature and at less than or equal to 2% total solids. Records of dilution with secondary effluent [non chlorinated please] needed to get to 2% total solids as well as additions to keep the level of the digestion tank up to the starting level must be kept. Oxygen levels should be kept at least at 2 mg/L and temperature at about 68 degrees F. Records of the samples taken and analyzed for total and volatile solids each week for five weeks must be kept and samples analyzed should be duplicated for each sampling event. **Be sure the sides of the tank are scraped and the sample is**

**completely mixed before sampling and document this on the lab sheets.** VSR should be calculated by Van Kleeck and be less than an additional 15%.

**Option 4. Specific Oxygen Uptake Rate [SOUR] Tests.** Records of this test must include your digester operating temperature – this is the temperature that the tests are run at because they are run immediately after taking the samples. The SOUR is then corrected to 68 degrees F. This test is limited to solids digested at temperatures between 50 and 86 degrees F. [This test may not be an option for some facilities in the summer or for heated aerobic digesters.] The tests should be run using the program developed by Pennsylvania and the EPA found at:

<http://www.dep.state.pa.us/dep/biosolids/software/software.htm#SOUR%20Test>.

Records of all the results must be kept. The arithmetic mean of successive tests – several over 2 or 3 weeks should result in a SOUR of less than or equal to 1.5 mg of oxygen/hr./g. total solids.

**Option 5. We will skip as no one is composting.**

**Option 6. Lime or alkaline stabilization.** This option is generally used when lime is used for pathogen reduction so the records are as mentioned in the previous article on pathogen reduction except the measurement is made again after an additional 22 hours without adding more lime. These records include the pH after mixing and then after 2 hours and 22 hours, the pH adjustment to 25 ° C, and the pH meter calibration [at least a two point calibration] each day it is used. A temperature conversion to 25 ° C chart is available. Remember to take the pH in only the liquid portion and allow the ammonia to off gas before taking it.

**Options 7 and 8. Drying to 75% or 90% total solids.** The records for this option would include what type of feed solids was dried [to assure the correct % total solids that should be attained] and all the measurements of total solids of the final product going to the field. Note: Dried primary solids especially should be kept dry before use!

**Options 9 and 10 Injection and Incorporation within 6 Hours** are the barrier conditions for meeting VAR, so it's not really possible to check on this by looking at records. An inspector would have to go to the site during application. Certification Statement 4 that covers management practices and these options if you use them for VAR is basically the record. However, if you are signing the statement, you should check with staff responsible for applying the biosolids that the requirement has been met. Records should be kept of who applied to what sites. There are times when the weather and soil conditions result in biosolids on the surface after an hour of application. Adjustment of the application may have to be made to meet the requirement.

If you have questions, give me a call or send an email 651-296-9292, [Jorja.dufresne@state.mn.us](mailto:Jorja.dufresne@state.mn.us). **PS:** Send me your email address to get on the Type IV distribution list and when planning your next application, please check site approval letters to be sure the site is approved and for any other management practices required.