



DEPARTMENT OF RESOURCES RECYCLING AND RECOVERY

1001 I STREET, SACRAMENTO, CALIFORNIA 95814 • WWW.CALRECYCLE.CA.GOV • (916) 322-4027
P.O. BOX 4025, SACRAMENTO, CALIFORNIA 95812

June 10, 2013

Climate Action Reserve
601 W. 5th Street, Suite 650
Los Angeles, CA 90071

Subject: Organic Waste Composting (OWC) Protocol Revision V1.1

Thank you for providing the California Department of Resources Recycling and Recovery (CalRecycle) the opportunity to review and comment on the proposed revisions to the OWC protocol (version 1.1). We have listed our comments below in the order they appear in the document.

Section 2.1 – Background

N₂O is identified as an emission that occurs when compost piles contain anaerobic pockets. However, N₂O is excluded (as noted in Table 4.1) as an emission source from disposal at landfills, which is also an anaerobic process. N₂O emissions should also be accounted for from anaerobic conditions associated with landfill disposal, especially at landfills that use greenwaste (a common feedstock for composting) for alternative daily cover for the operational face. Although published research is limited in this area, reports from Europe and China demonstrate that N₂O concentrations from landfills are not zero and are generally proportional to Methane emissions (e.g., N₂O emissions increase as methane emissions increase).

Section 2.2 – Project Definitions

The time, temperature, and turning frequency for forced aeration systems do not require an insulating cover layer. This is a requirement in CalRecycle regulations and a recommendation in the USEPA's 503 regulations for managing biosolids. This is a Best Management Practice to ensure that the Process to Further Reduce Pathogens (PFRP) is done effectively and should be considered within this protocol.

USEPA's 503 Biosolid regulations – Appendix J: Recommendations for Specific Technologies:
Aerated static pile - Aerated static piles should be covered with an insulation layer of sufficient thickness to ensure that temperatures throughout the pile, including the pile surface, reach 55° C. It is recommended that the insulation layer be at least 1 foot thick.

CalRecycle Composting Regulations - Section 17868.3. Pathogen Reduction (b)(4):
If the operation or facility uses an aerated static pile composting process, all active compost shall be covered with 6 to 12 inches of insulating material, and the active compost shall be maintained at a temperature of 55 degrees Celsius (131 degrees Fahrenheit) or higher for a pathogen reduction period of 3 days.

Section 5.2.2.1 – Methane Emissions from the Composting Treatment System

Project developers are allowed to develop their own site-specific emission factor, but only for negatively-aerated static pile systems. Site-specific emissions should also be allowed for Positive Aeration Systems. The Gore Cover System for composting, a Positive Aeration System, has been proven as a very effective method in controlling emissions. Further, a study recently conducted by the San Joaquin Valley Air Pollution Control District (SJVAPCD) in California tested emissions from a Positive Aeration System, covered with a biofilter, using the USEPA flux chamber as modified under South Coast Air Quality Management District (SCAQMD) Rule 1133. The SJVAPCD Study found a 70% reduction in N₂O emissions relative to the control, resulting in an emission reduction of 0.0015 MTCO₂E/ton of feedstock. Methane emissions in this study were within your listed values of 0.03-0.09 MTCO₂E/ton (Table 5.2).



Table 5.2 – Methane and Nitrous Oxide Emission Factors

The emission factors listed in Table 5.2 for Nitrous Oxide (N₂O) are significantly higher than the values listed in other sources. For example, the California Air Resources Board's (CARB) Composting Emission Reduction Factor (CERF - 2011) report states that N₂O emissions are 0.025 MTCO₂E/ton which is significantly lower than your listed value of 0.06-0.09 MTCO₂E/ton. CalRecycle recommends that N₂O emission factors from CARB be used in lieu of the IPCC's values to stay consistent with current research.

We look forward to working with CAR on finalizing the OWC protocol and working together on future protocol development. If you have any questions, please contact me at (916) 341-6605.

Sincerely,



Brenda Smyth, Branch Chief
Statewide Technical & Analytical Services Branch