

Standardized Product Definition and Product Testing Guidelines for Biochar That Is Used in Soil (aka IBI Biochar Standards)

Technical Program Revision

Published September 30, 2013

Section 4. Biochar Material Test Categories and Characteristics

Sub-section 4.2. Test Category B – Toxicant Reporting

Revision overview: *Allowance of additional test methods for Polycyclic Aromatic Hydrocarbons (PAHs) and Polychlorinated Biphenyls (PCBs).*

CONTEXT: Toxicants potentially present in biochar products can be divided into two categories: those that may be present in the feedstocks used (metals and polychlorinated biphenyls (PCBs)) and those that may be produced by the thermochemical conversion process used to make biochar (polycyclic aromatic hydrocarbons (PAHs) and dioxins). To this end, Test Category B – Toxicant Reporting outlined on pages 13-14 of the *IBI Biochar Standards* Version 1.1 contains a suite of testing requirements to ascertain levels of known potential toxicants in biochars. Table 2 – Test Category B Characteristics and Criteria lists the required test methods to analyze the required components of Category B.

The required test method for PAHs and PCBs is listed in Table 2 as US Environmental Protection Agency (EPA) Method 8275A (Semivolatile organic compounds (PAHs and PCBs) in soils/sludges and solid wastes using thermal extraction/gas chromatography/mass spectrometry (TE/GC/MS)). After further investigation, IBI has revised the required test method for PAHs and PCBs to additionally allow EPA Method 8270 (Semivolatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)) for PAHs, and EPA Method 8082 (Polychlorinated biphenyls (PCBs) by gas chromatography) for PCBs. IBI made this decision for the following reasons:

1. *Lack of testing availability.* Although EPA 8275 is an established test method, IBI has polled numerous commercial environmental testing laboratories and determined that there is a dearth of accredited labs that conduct EPA 8275.
2. *Industry and regulatory acceptance.* The commercial testing labs polled by IBI confirmed that EPA 8082 and EPA 8270 are the test methods required to determine PCBs and PAHs, respectively, by the majority of state and federal regulatory programs in the US that mandate the testing of air, soils, water, plants, and other materials for potential contamination by PCBs and PAHs, among other hazardous compounds.

REVISION: In addition to EPA 8275A, the allowable test method for PCBs shall be EPA 8082, and for PAHs shall be EPA 8270.

REFERENCES

US Environmental Protection Agency (1996) *METHOD 8275A Semivolatile organic compounds (PAHs and PCBs) in soils/sludges and solid wastes using thermal extraction/gas*

chromatography/mass spectrometry (TE/GC/MS).

<http://www.epa.gov/osw/hazard/testmethods/sw846/pdfs/8275a.pdf> (accessed September 2013).

US Environmental Protection Agency (2007) *METHOD 8082A Polychlorinated biphenyls (PCBs) by gas chromatography.*

<http://www.epa.gov/osw/hazard/testmethods/sw846/pdfs/8082a.pdf> (accessed September 2013).

US Environmental Protection Agency (2007) *METHOD 8270D Semivolatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS).*

<http://www.epa.gov/osw/hazard/testmethods/sw846/pdfs/8270d.pdf> (accessed September 2013).