

MSC Protocol for Determining Chromated Copper Arsenate Levels in Horticultural Mulches



Purpose:

To determine if any materials containing the wood preservative, Chromated Copper Arsenate (CCA), have been used in the production of a specific mulch product.

Materials:

A mulch sample will be sent to the MSC Office for testing. A minimum sample will consist of at least one cubic foot of mulch. Preferably, the sample will be in a bag as it would be ready for sale (e.g., 1.5 cu ft, 2 cu ft or 3 cu ft bag).

Test Procedure:

1. Each sample will be tested using an X-Ray Fluorescent Spectrophotometer (XRF).
2. The sample will be analyzed non-destructively through the sample bag using a one-minute exposure per reading.
3. One reading will be taken at each corner of the secondary display (back) panel and one reading will be taken in the center of the secondary display panel for a total of five (5) readings.
4. If after 5 readings no copper, chromium or arsenic is detected* at levels equal to or greater than 10ppm, no further analysis will be required.
5. If any detection of copper, chromium or arsenic is found >9ppm, the entire sample will be subject to pass/fail review.

*Lower Detection Limit for As = 4ppm, Cu = 22ppm & Cr = 84ppm.

Pass/Fail:

1. If the AVERAGE values for all three metals are <10 ppm, the sample will have passed the MSC CCA Test for Landscape Mulches.
2. If the AVERAGE of the 5 test values for each heavy metal (Chromium, Copper and Arsenic) is 10 ppm or more, new samples of the mulch product will be requested and retested for verification. If the retest is similar to the original, the mulch will be considered to contain CCA and will fail the MSC CCA Test for Landscape Mulches.

If XRF Technology Is Not Available At The Testing Facility

Pre-test Grinding Procedure:

1. The sample mulch will be ground so as to pass through a 1/16th inch sieve screen.
2. The ground mulch will be thoroughly mixed and placed back into the original bag for samples.

Sample Procedure:

1. Samples will be collected through a diagonal cross section using a modified version of the AOAC procedure for dry products.
2. Three samples will be collected for analysis.

Sample Preparation:

1. Samples will be digested using a microwave-assisted acid digestion of siliceous and organically-based matrices (EPA Method 3052).
2. A five (5) gram sample will be used instead of the typical 0.5 gram sample for analysis.

Analysis:

1. Once the sample is digested, it will be analyzed for arsenic, chromium and copper content using inductively coupled plasma-mass spectrometry (EPA Method 6020).