



CO₂ PRODUCTION TEST

51954

1.0 EXECUTIVE SUMMARY

Roy F. Weston, Inc. (WESTON[®]) conducted a CO₂ Production Test on the test substance 51954. This test is designed to determine the rate and extent of the ultimate biodegradation of the test substance under aerobic conditions. The procedure is based on the Organisation for Economic Cooperation and Development (OECD) Guideline 301B "CO₂ Evolution Test."^a Results from this test are considered positive if the actual amount of carbon dioxide produced during the first period is 60% or greater of the amount of carbon dioxide that theoretically could be produced. This criterion is based on the observation that microorganisms generally assimilate from 5 to 40% of substrate carbon and only 60-95% of substrate carbon is converted to carbon dioxide.^b A positive result would indicate that the test substance is probably biodegradable under environmental conditions.

The test apparatus consisted of four glass four-liter Erlenmeyer flasks containing two liters of modified biochemical oxygen demand (BOD) water. CO₂-free air was supplied to the flasks through a CO₂ scrubbing train. Three bottles containing 100 mL of Ba(OH)₂ were connected to each flask to trap the evolved CO₂ from the flasks. The airflow through the scrubbing train into the flasks was at a rate adequate to provide one to two bubbles/second into the Ba(OH)₂ bottles. All items were connected via Tygon tubing.

The microbial inoculum was activated sludge collected from the Downingtown Regional Water Pollution Control Center (DRWPCC), Downingtown, Pennsylvania on 11 April 1994. The sludge was maintained in duplicate semi-continuous activated sludge (SCAS) units at a total suspended solids (TSS) concentration of approximately 2,500 mg/L. The sludge had no prior exposure to the test substance.

^a Anonymous, OECD Guidelines for Testing of Chemicals, Guideline 301B "CO₂ Evolution Test," 1993.

^b EPA (U.S. Environmental Protection Agency). 1979. Toxic Substances Control Act Premanufacture Testing of New Chemical Substances. *Fed. Regist.* 44:16240-16292.