

# Soil chemistry still affected 23 years after large application of Fluidized Bed Material

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## ABSTRACT

This study was conducted to assess the movement of arsenic, aluminum, calcium, copper, lead, magnesium, manganese, mercury and zinc in an old apple (*Malus domestica* Borkh) orchard that received a one time application of 36 kg/ m<sup>2</sup> of fluidized bed combustion material (FBCM) 23 years earlier. Soil samples were taken in an area where 15 apple trees were planted on 1.8 by 1.8 m spacing. Fifteen composite samples were collected from the area at three depths 0-10, 10-20 and 20-30 cm. Samples were collected from an adjacent non-orchard field with the same soil type as control. Samples were air dried and sieved to < 2 mm and analyzed. Soil pH values in the surface soil decreased over time but increased in the sun-surface when compared to five years after FBCM application. For example in this study, soil pH values were 7.9 for the three depths compared to five years after FBCM application where pH values in surface ranges from 8 to 12 and 7.2 at 15 cm depth. Mehlich-3 extractable Al, Mn, Pb and Zn concentrations did not increase with application of FBCM; however, As, Cu, Ca, P and Mg concentrations were higher for the FBCM treatment. With the exceptions of Ca and Mg, nutrients and metals were generally lower in the 0-10 cm depth. Total mercury concentrations were similar for the FBCM treatment and control. Results from this study demonstrated that 23 years after FBCM application, some sub-soil chemical properties remained altered but not at toxic levels.

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