

Total Digestion of earthworms for ICP-MS analysis
Version 1.1
10/28/08

- 1) Before going into clean lab, make sure street shoes are covered or changed, and lab coat is on. Gloves and safety glasses should be worn at all times while working in the lab.
- 2) Dump nitric acid from clean Teflon vial into carbonate chips in sink. Rinse bottle with DI water, then wipe dry with a Kim-Wipe.
- 3) Weigh Teflon vial, then weigh desired amount of earthworms into vial. Record weight and sample information in logbook next to balance. Place uncapped vial in oven set at 110°C and leave for 24 hours.
- 4) Carefully remove vial from oven, let cool in desiccator, then re-weigh to get the earthworm dry weight.
- 5) Make stock of 7N HNO₃ (if necessary). To make 7N HNO₃, mix a 1:1 ratio of concentrated HNO₃ and DI water into a bottle. When mixing acidic solutions, always add acid to water. Use caution when working with concentrated HNO₃. Cap and mix well before using.
- 6) Add 5 ml of 7N HNO₃ to vial, cap, and then heat vial on hotplate set at 120°C for 12 hours.
- 7) Remove vial from hotplate and let cool for 15 minutes. Uncap vial and place on hotplate to evaporate acid to dryness.
- 8) Remove vial from hotplate, add 1 ml of H₂O₂ and leave uncapped for 1 hr.
- 9) Add 2 more ml of H₂O₂ to each vial and loosely cap for 1 hr, then tighten cap and heat on hot plate set at 120°C for 12 hours.
- 10) Remove vial from hotplate and let cool for 15 minutes. Uncap vial and place on hotplate to evaporate H₂O₂ to dryness.
- 11) Fill vial about ½ full with internal standard solution (ISS). See “ICP-MS Solution Instructions” if ISS needs to be prepared. Re-cap, shake gently to mix sample, and place back on the hotplate for 5-10 minutes to allow sample to go back into solution.
- 12) Label and tare a clean 50 ml centrifuge tube. Pour entire contents of sample vial into tube, and rinse 3 times with ISS. Add ISS to tube up to 50 g total mass (or mass desired by analyst). Record exact mass. Mix thoroughly.
- 13) Open an ICP-MS worksheet template and enter the sample information requested. The template automatically calculates the dilution factor for each sample, which will be needed when running the samples on ICP-MS.
- 14) Label a 15 ml centrifuge tube and pour 5-10 ml of sample from 50 ml centrifuge tube into it. Sample is now ready for ICP-MS analysis!
- 15) Add 7N HNO₃ to dirty Teflon vial, cap it, and let it heat on a hotplate overnight to clean it.