

## **Protocol for Leaf, Stem and Soil Sample Collection. Instructions for the MIBA (Moisture Isotopes in the Biosphere and Atmosphere) Network**

We ask you to sample and send with the return shipment samples of 1) leaves, 2) stems and 3) soil. Vacuum tight test tubes (2 Vacutainers each) are included in the Kit for this purpose.

**Where:** Close to the flux tower

**When:** Temperate and boreal zones: during the vegetative period (when transpiration is still active)

**How often:** Every two weeks (deciduous forests), once per month (coniferous forests)

**Weather conditions:** No rain, the leaves and stems must be dry for sampling

**What time of the day:** between 12:00 and 16:00 (solar time)

**How:** To avoid moisture loss and isotopic fractionation during sampling, fill the sample tubes and seal as quickly as possible.

**1. Leaf samples.** Please use 2 vacutainers, each of 3-4 young fully expanded, **sunlit** and ventilated leaves (preferably where the leaf normal (the vector perpendicular to the plane of the leaf) is pointing directly toward the sun) of the dominant species at your site. Try to fill up  $\frac{3}{4}$  of the vacutainer. Indicate the species and community from where the samples were taken. Remove petiole and major vein (with scissors) and take only the half of the leaves without the vein, roll the leaves together and insert them into a vacutainer tube. Make sure the top end of tube is clean and the rubber stopper provides a good seal. Seal the cap with paraffin film. When sampling needles of conifers and blades of grasses just fill the vacutainer. If the grass leaf is too small for removing the vein include the whole blade. When sampling big leaves (corn, oak etc.), take the parts of the leaves which are most sun exposed

**2. Stem samples.** For each of 2 vacutainers, choose small non-green stems/branches of a thickness that will allow 3-4 pieces to fit into the vacutainer (cut to size). Try to fill up  $\frac{3}{4}$  of the vacutainer. Again, please make sure the top of tube is clean and the stopper gives a good seal. When sampling grass, get the stems below the soil surface (not green!) of the shielded parts at the stem base (please make sure you remove the surrounding green components).

**3. Soil.** Fill up about  $\frac{3}{4}$  of a vacutainer with **soil from approx. 10 cm depth** from a "representative" location at your site. Please remove roots from the samples. Again, please make sure top of tube is clean and stopper gives good seal (use paraffin film as well if possible).

**Shipping:** Send the samples to the Todd Dawson Lab in Berkeley (see return address labels), as soon as possible.

**Storage** of the samples before shipping: if the samples cannot be shipped out right away, store them in a dark and cool place (best freezing).