Aridlands Ecology Laboratory
2010.06.08, S.Castle

Costech CHN Analyzer Traps and Columns

Changing Water Trap

Water trap may need to be change if the Mag Perchlorate has a shiny luster or is translucent as opposed to the fresh Mag Perchlorate which is dull and chalky looking.

1. Put instrument on standby
2. Wear safety goggles and gloves
3. Remove right hand panel from instrument
4. Unscrew H_20 trap from plumbing (red caps top and bottom)
5. Inspect rubber seals for cracks, replace if any sign of damage
6. Dispose of quartz wool and Mag Perchlorate in proper Haz Waste container
7. Use wooden dowel to chip out old Mag Perchlorate
7. Wipe empty tube with kimwipe
8. Pack outlet side with 5mm quartz wool (do not pack too tightly)
9. Fill trap with new Mag Perchlorate and pack inlet side with 5mm quartz wool
10. DO NOT Pack the trap too tightly, air needs to be able to flow through quartz wool
11. Replace rubber seals Teflon side should butt up to the instrument plumbing and rubber side to the glass trap.
12. Screw on red caps and replace trap.
13. Do leak check (see section on II.3 or use hand held meter)

Changing Reduction Column (Right Hand Column)

Reduction column seems to go out quickly. You may need to change the column if you are getting bad standards, no N data, or very flat peaks. Even if only half of the column appears to be used, you may need to change it still.

1. Put instrument on standby and let cool
2. Wear safety goggles and gloves (column will be hot!!)
3. Remove Left hand panel from instrument
4. Loosen large nut on top and bottom of column (see figure 3.3 Furnaces). Be careful not to chip column in this process.
5. Carefully move Combustion/Reduction connection to the side (left) but keep in mind that by doing so you are unscrewing the combustion column slightly
6. On bottom of column remove nut, thermal collar, and reactor seal
7. Repeat same on top of column while holding tube.
8. Remove column and set aside to cool
9. The top of the old column maybe reused in a future column. Save copper filings that are not discolored (gray) in a bottle and mark USED. Discard quartz wool and remaining filings in proper Haz Waste container. Use tool to get filings out of column.
10. To prepare new column get clean quartz reactor tube, quartz wool, and copper filings. Refer to manual diagram 6.1.2. Pack well 4cm of quartz wool in bottom of tube. Make sure that there is no quartz wool hanging out of column, it may get singed. Using funnel, fill quartz reactor with copper filings up until 1cm from top of column. Tap column to settle filings and refill. Placing the column on a lab stand with clamp

and column resting on counter may aid in this process. Finish off the top of column with 1cm quartz wool.
11. Replace column in slot and reassemble fittings make sure that the column is aligned so that when nuts are reconnected and tightened, the column is not going to crack. Align the washers and seals as straight as possible.
12. Hand tighten connections on top and bottom and check connection on oxidation column
13. Do leak check (see section on II.3 or use hand held meter)
14. Run several bypasses. If erroneous peaks appear there may be a leak or a blockage

Changing Combustion Column (Left Hand Column)

Combustion column seems to go out every 800-1000 samples.
1. Put instrument on standby and let cool
2. Wear safety goggles and gloves (column will be hot!!)
3. Remove Left hand panel from instrument
4. Loosen large nut on top and bottom of column (see figure 3.3 Furnaces). Be careful not to chip column in this process.
5. Carefully move Combustion/Reduction connection to the side (left) but keep in mind that by doing so you are unscrewing the combustion column slightly
6. On bottom of column remove nut, thermal collar, and reactor seal
7. Repeat same on top of column while holding tube.
8. Remove column and set aside to cool
9. Discard quartz wool and reduction chemicals in proper Haz Waste container. Place reactor column in the sharps box.
10. To prepare new column get clean quartz reactor tube, quartz wool, and chromium and silvered cobaltous. Refer to manual diagram of combustion tube packing. Placing the column on a lab stand with clamp and column resting on counter may aid in this process. Make sure that this column is not packed below the place where the glass widens. The final 1cm section of quartz wool should fall 0.5-1cm above the place where the neck widens. This will ensure that the expansion of the tin trap in the oven will not crack the column.
11. Replace column in slot and reassemble fittings make sure that the column is aligned so that when nuts are reconnected and tightened, the column is not going to crack. Align the washers and seals as straight as possible.
12. Hand tighten connections on top and bottom and check connection on reduction column.
13. Do leak check (see section on II.3 or use hand held meter).
14. Run several bypasses. If erroneous peaks appear there may be a leak or a blockage.

Procedure for changing Tin Trap

When instrument is in stand by:

1. Put on safety glasses.
2. Loosen the main auto sampler nut.
3. Move autosampler off the tube carefully making sure not to chip combustion tube.
4. Lower the extraction tool down into the combustion tube, squeeze, and carefully lift out the crucible and place it in the baking pan.

5. Prepare the cool insert with 1 cm of quart wool and a few mm of chromium oxide.
6. Repeat steps 1-4 in reverse.
7. Do leak check (see section II.3.).

When instrument is in work mode:

1. Put on safety glasses.
2. Press Abort. Enter
3. Press F3 to put gases in stand by.
4. Loosen the main auto sampler nut.
5. Move autosampler off the tube carefully making sure not to chip combustion tube.
6. Lower the extraction tool down into the combustion tube, squeeze, and carefully lift out the crucible and place it in the baking pan
7. Prepare the cool insert with 1 cm of quart wool and a few mm of chromium oxide.
8. Repeat steps 1-4 in reverse.
9. Do leak check (see section on II.3.).