Tool Operating Manual for UV-ozone (UVO) Cleaner

1. **SOP for UVO cleaner:**
   a) **PPE:**
      i. Safety glasses
      ii. UV protective glasses
      iii. Chemical apron
      iv. Gloves: Technichem Triblend (nitrile, neoprene, latex), double layered
      v. Covered shoes
   b) UVO cleaner is placed inside fume hood 5.
   c) Read the safety manual of the tool kept in the drawer below the tool
   d) It is connected to an exhaust system through a duct inside hood.
   e) It is grounded electrically.
   f) Leak test has been done for the UVO cleaner using Honeywell ozone detector and no leak has been found (7th May 2015). Leak test will be performed once in a quarter. Leak test to be done after any maintenance activity.
   g) UV protective glass will be used while using the system.
   h) Fume hood will be kept on all the time during the process
   i) A placard will be placed near the tool with "UV-OZONE ON" on it.
   j) Pull out the sample tray / drawer and place the samples to be cleaned.
   k) Close the tray / drawer properly. Once the drawer is shut completely, the safety interlock switch engages. If either the drawer is opened or the cover removed, the safety interlock mechanisms automatically shut off the UV light source. Thus, accidental exposure to harmful UV radiation is prevented.
   l) Switch on the main electrical power supply. Switch on the "black" switch.
   m) Set the timer. This is done as follows. There are two buttons P1 & P2. P1 is the exhaust time and P2 is the total process time. Therefore clean time = P2 –P1. When P1 button is pressed preset value 1 is displayed and when P2 is pressed preset value 2 is displayed. P1 & P2 values are entered by pressing E button. P1 is recommended to be set at 8 min. Therefore P2 = 8 min + preset clean time.
   n) Once the cleaning and exhaust time cycles have been programmed into the timer, push the green start button to activate the timer. The red indicator light will illuminate acknowledging that the cleaning cycle has been initiated. Never open the drawer when the red indicator light is on to avoid exposure to ozone. The timer will indicate that it is in the cleaning cycle by a small dot on the lower left corner of the timer display.
   o) The UV light source will be extinguished and the timer will continue to the programmed exhaust cycle time, when the cleaning cycle is completed. The timer will indicate that it is in the exhaust cycle by a small red dot on the lower right of the timer display. The red indicator light will remain on warning the operator that

it is not safe to open the unit's drawer. When both cycles have been completed, the timer will sound an audible alarm. The green indicator will light indicating that it is safe to open the drawer. The drawer can then be opened and the samples unloaded.

p) Ozone concentration: 500-1000 ppm when air is used and 1500-3000 ppm when oxygen is purged from cylinder.

q) Exhaust operation: The tool has an "Ozone-killer" and a Blower installed at the exhaust. The ozone-killer destroys ozone using a proprietary chemical before the blower sends it out to atmosphere.

r) Ozone killer model number OKL200-4 is good for lifetime with no maintenance required (response got from the vendor).

RE Query on safety

s) In case of emergency, immediately deactivate the unit by pressing the emergency shut off switch. To reactivate the unit, turn the emergency control switch clockwise and allow both time cycles to continue. Lamps will remain off.

t) If the unit is interrupted during operation, allow both cycles to be completed before opening the unit's drawer.

u) The tool is equipped with four inlet ports in the rear of the unit, which allow different gas media to be used independently or simultaneously. The inlet ports are connected to internal electrical valves, which may be controlled by the valve control switch located in the rear of the unit. Room air is to be used for normal operations which require all media inlets to be exposed. For using other media inlet gases SOP has to be formulated following operating manual in consultation with the vendor.