MOSES SOPs for Exposure Chambers

UNIVERSITY OF CALIFORNIA AT SAN FRANCISCO

CEMALB Standard Operating Procedure (SOP)

TITLE: UCSF, Human Exposure Laboratory Chamber LabVIEW

Version: 1.0 **Directory/file[a]:** //Shared on 'CEMALB/QA/SOPS/'

Author: H Wong **Signature:** **Date: 15 October 2012**

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ANNUAL REVIEW[d]

Signature	**Date**

SOP UPDATED TO VERSION [e]

Explanations: [a] Incorporate the version of SOP into the file name.
[b] If available.
[b] If the revision is minor the version number is increased by 0.1, i.e., to 1.1. <u>If the revision is major, do not overwrite the old document but create a new one with the updated file name and a new cover sheet with the new version number, i.e., 2.0. You must keep the old version on the server in SOPS directory and in your files!</u>
[c] Annual review does not change the version of the SOP.
[d] Change the version # as necessary.

UCSF HUMAN EXPOSURE LABORATORY LabVIEW SOP

1. SCOPE OF APPLICATION:

1. To record the ozone concentration and measured minute ventilation (V_E) during an exposure visit.

2. PREREQUISITES:

1. Training:
    1. The individual should be able to demonstrate familiarity with the LabVIEW program, and accessory equipment: A. Fleisch Pneumotachograph, Macintosh G4 Computer, Flash drive, Validyne components, Non-Rebreathing Valves and tubing, 3 Liter Calibration Syringe, Conext Uninterruptible Power Supply (UPS), and ozone analyzers: ThermoEnvironmental 49C Ozone Analyzer, and Teledyne Advanced Pollution Instrumentation Photometric 400E Ozone Analyzer.

2. Equipment and supplies:
    1. LabVIEW Version 6.1
    2. Macintosh G4 Computer
    3. Conext CNB325 Uninterruptible Power Supply (UPS)
    4. Internet Connection
    5. Validyne CD19A Carrier
    6. Validyne FV 156 integrator
    7. A. Fleisch 6 Volt Pneumotachograph: 1 mm H_2O = 0.855 l/sec, 4 mm H2O = 4.277 l/sec, 10 mm H2O = 8.232 l/sec.
    8. Pneumotachograph heater.
    9. Respiratory accessories: Non-Rebreathing Valve, tubing, clamps, mouth piece and nose clip.
    10. HP Laser Printer P2055
    11. 3 Liter Calibration Syringe: Model 5530 Series, Hans Rudolph, Inc 8325 Cole Parkway, Shawnee, KS 66227 *800/456-6695) hri@rudolph.com
    12. Ozone Analyzer: Certified unit: Teledyne API, Advanced Pollution Instrumentation Division , 9480 Carroll Park Dr., San Diego, CA 92121 800/324-5190 http://www.teledyne-api.com/; Advanced Pollution Instrumentation Photometric Ozone Analyzer Model 400E (TAPI400E-58); S/N#: 058.; Daily Use unit: ThermoEnvironmental Instruments (TE49C) , Franklin, MA 02038. 866/282-0430 toll free; 508/520-0430; Model 49C; Ozone Analyzer; SR#: 49C-78830-389.

3. CAUTIONARY NOTES OR SPECIAL CONSIDERATIONS:

1. Ensure all equipment and associated parts are properly connected.
2. Confirm the "ON" status of the Conext UPS battery and that the Macintosh G4 Computer, and TE49C analyzer are plugged in.
3. Use established naming convention to properly save data.

4. PROCEDURES

1. Environmental Chamber.
    1. Consult UCSF WebCTRL SOP.
2. Conext Uninterruptible Power Supply (UPS).
    1. Power on Conext UPS.
        1. Hold the top button down for 3 seconds.
3. Macintosh G4 Computer.
    1. Power on.
    2. Activate LabVIEW program.
        1. Double click "Chamber Monitor" icon on the upper left corner of the desk top.
            1. Data Folder Path.
                1. Direct to the study specific folder.
                1. General format: "HEL Mac:LabVIEW Data:STUDY NAME:Patient A/B ID#: TEST TYPE.
                1. E.g.:MOSES: "HEL Mac:LabVIEW Data:MOSES:#####:TTTT".
        2. General Settings.
            1. Patient A/B ID (6 characters): For MOSES: #####.
            2. Test Type (4 characters): For MOSES: SCRN EXP1 / EXP2 / EXP3.
            3. Gas sampled: Select at least one: Ozone, NO2, CL2 and empty.
            4. Environmental.
                1. Sampling Period (s): 10
                2. Baseline Duration (s): 120
                3. Alarm Sound (Y/N): Y
                4. Graph Initial Offset Corrected (Y/N): Y
            5. Calibration.
                1. Syringe Volume (mL): 3000
                2. Pumps Required: 20
                3. BTPS Factor: (ATPD → BTPS)
                1. Expiratory Minute Ventilation: 1
                2. Inspiratory Minute Ventilation: 1.12
            6. Logging.
                1. Time (Time-of-Day/Elapsed): TOD
        3. Analog Settings
            1. Device: 1
            2. Sampling Rate: 100 samples/sec
            3. Pneumotachograph.
            4. Temperature (°C).
            5. Rel. Humidity (%).
            6. Ozone (O_3-ppb).
                1. Units: ppb
                2. Input Limit (Volts): 1.0.
                3. Scale Factor (Units/Volts): 100.E+0 for ppm; 200.E+0 for ppb.
                4. Offset (Units/Volts): 0.000.
                5. High Alarm (Units).
                1. Filter air: 5.0 ppb.
                2. Other conc.: +5% of Offset Corrected Target Ozone Conc. (OCTOC).
                6. Target (Units): OCTOC.
                7. Low Alarm (Units).
                1. Filter air: -5.
                2. Other Conc.: -5% OCTOC.
                8. Raw Voltages: Varied.

    9. Scaled Values: Varied.
  7. NO_2 (ppm).
  8. CL_2 (ppm).
  9. Empty (ppm).
4. Save Settings.
  1. Select OK.
5. Initial / Final Offset.
  1. Connect the charcoal filter to the sampling inlet of the ozone analyzer(s).
  2. Single click INITIAL / FINAL OFFSET to collect data. The INITIAL / FINAL OFFSET button is grayed during data collection. Simultaneously record the displayed ozone conc. displayed on the ozone analyzer(s) and LabVIEW displayed window, every 30 seconds, X 10 in the Ozone Generation Worksheet (OGW). Repeat if necessary.
  3. Remove the charcoal filter and re-connect the sampling line to the analyzer(s) when done.
  4. The LabVIEW EXPOSURE START button will not be available if the INITIAL OFFSET is not done.
6. Ventilation Calibrate
  1. Allow the 3 Liter Calibration Syringe to acclimate to the chamber's temperature.
  2. Expiratory Minute Ventilation
    1. Turn on the pneumotachograph heater.
    2. Confirm that the pneumotachograph connections reflect the air flow.
    3. Connect the expiratory port of the non-rebreathing valve to the pneumotachograph with the 2 ft. tubing. Clamp the tubing at the pneumotachograph end.
    4. Connect the calibrating syringe to the mouth piece port of the non-rebreathing valve with a tube connector, flush several times, and stop with the syringe full.
    5. Return to the Macintosh computer.
  3. Inspiratory Minute Ventilation
    1. Confirm that the pneumotachograph connections reflect the air flow.
    2. Connect the inspiratory port of the non-rebreathing valve to the pneumotachograph with the tubing. Clamp the tubing at the pneumotachograph end.
    3. Connect the calibrating syringe to the mouth piece port of the non-rebreathing valve with a tube connector, flush several times, and stop with the syringe full of air.
    4. Return to the Macintosh computer.
  4. Run the LabVIEW Ventilation Calibrate program.
    1. Single click the VENTILATION CALIBRATE button, and then the START button.
      1. There will be a graphic display of the pumps and number of pumps.
      2. The LabVIEW program analyzes the area under the curve and averages the voltage deflection for each 3 Liter displacement. The calibration factor is used to calculate V_E.
    2. Completely empty and fill the calibration syringe 20 times with brief pauses after each empty and fill stroke.
    3. Review the calibration data, and redo if necessary. If acceptable, SAVE, CTRL P (Print screen-optional), and EXIT.

    4. The Ventilation Calibrate is noted in the logging pane.
7. LabVIEW Data Collection
    1. When the OCTOC is stable, and the subject begins the exposure period, single click the EXPOSURE START button and record the start time on the OGW.
        1. The “Exposure Start” will be displayed in the logging pane.
        2. The LabVIEW EXPOSURE START button will not be available if the INITIAL OFFSET was not performed.
8. LabVIEW Minute Ventilation Measurement
    1. Allow approximately 15 seconds for the subject to place the mouth piece into his/her mouth, and the nose clip on his/her nose.
    2. Single click VENTILATION MEASURE, and then START to collect V_E. During data collection the START button is grayed.
    3. SAVE, PRINT (optional), and EXIT. Repeat steps 4.3.2.8.2-3 for another V_E measurement.
9. End of Exposure
    1. Single click EXPOSURE STOP.
        1. “Exposure Stopped” will display in the logging pane.
    2. Final Offset Measurement. The average of the initial and final offset are used to correct for the reported LabVIEW gas concentration.
        1. Repeat section 4.3.5.
        2. If you do a second Final Offset measurement, single click REPLACE when the message, “Replace existing “HEL MAC:Lab….dat”? appears.
    3. Single click QUIT.
10. Export LabVIEW Data
    1. Connect a Flash Drive to the Macintosh USB port.
    2. Double click the “HEL Mac” icon (upper right of Macintosh screen).
        1. Find the specific “…Study:Patient A/B ID#: Test Type” folder
        2. Place the mouse’s cursor on the folder, and while holding down the mouse, drag the selected folder to the Flash Drive icon, and release the mouse.
        3. Open the Flash Drive and confirm that the dragged folder is there.
    3. Remove the Flash Drive.
        1. Single click on the Flash Drive icon.
        2. Single click on SPECIAL (top of screen), scroll to and select EJECT.
        3. Single click OK to “You may now remove…”
        4. Remove the Flash Drive.
11. Import LabVIEW Data to the Dell Optiplex 745/960 Computer
    1. Insert the Flash Drive into the Dell Optiplex 745/960 USB port.
    2. Open the Flash Drive.
        1. Copy the “…Study:Patient A/B ID#: Test Type” folder
            1. Place the mouse’s curser on the folder, RIGHT click, scroll to COPY, and single RIGHT click.
        2. Open the subject’s visit folder, on the HEL’s Server.
            1. Place the curser anywhere in the folder, single RIGHT click, scroll to PASTE, and single LEFT click.
            2. Verify the import of your folder.
            3. Delete the folder from the Flash Drive.
    3. Close the Flash Drive
        1. Close all documents in the Flash Drive, EJECT Flash Drive, and return the Flash Drive to the Validyne Rack.

            1. Select exported folder, RIGHT click, select DELETE and LEFT click.
            2. Respond, “Yes” and LEFT click for Are you sure you want to remove folder…”
    12. Access the imported LabVIEW Chamber Ozone Conc. and Minute Ventilation Files on the Dell Optiplex 745/960 Computer.
        1. Chamber Ozone Conc.:
            1. Open the folders and find the “…Study:Patient A/B ID#: Test Type-Expos-…” document.
            2. SELECT data, COPY, and PASTE in the A:1 cell of the subject’s OGW LabVIEW Ozone Concentration Worksheet (bottom tab of the Excel spread sheet).
            3. Confirm and report the averaged Offset Corrected Ozone Conc. data.
            4. Save.
        2. Minute Ventilation:
            1. Open the folders and find the “…Study:Patient A/B ID#: Test Type-Vent-…” document.
            2. SELECT data, COPY, and PASTE in the A:1 cell of the subject’s OGW LabVIEW Minute Ventilation Worksheet (bottom tab of the Excel spread sheet).
            3. Confirm and report the V_E.
            4. Save.
3. Macintosh G4 Computer Power Down
    1. Single click SPECIAL (top), scroll to and select SHUT DOWN.
4. TE49C Analyzer
    1. Turn off.
5. Conext UPS
    1. Turn off.
        1. Hold top button down for 3 seconds.

5. QUALITY CONTROL

1. Not applicable.

6. INFECTION CONTROL

1. Not applicable.

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7. REFERENCES

1. Not applicable

CEMALB Standard Operating Procedure (SOP)

TITLE: UCSF, Human Exposure Laboratory Ozone Generation

Version: 1.0 **Directory/file[a]:** //Shared on 'CEMALB/QA/SOPS/'

Author: H Wong **Signature:** **Date: 16 October 2012**

Revised by: H Wong, J. Balmes **New version[c]:** 1.1 **Date: 24 January 2014**
Revisions/additions: Section 3, Cautionary Notes or Special Considerations. Add: #4. Describing the frequency at which the TAPI400E58 Ozone Analyzer displays the ozone concentration. #5. Describing the frequency at which the TE49C Ozone Analyzer displays the ozone concentration, and that the reported ozone concentration is offset corrected. #6, Except when being serviced, run the TAPI400E58 and TE49C Ozone Analyzers simultaneous during the study exposure. and, #7, Manually record the ozone concentration measured by the TAPI400E58 and TE49C Ozone Analyzers every 5 minutes.
Section 5, Quality Control. Add: #2. If the recurring average difference between the TAPI400E58 and TE49C Ozone Analyzers are ≥ 5 %, contact BAAQMD for service and QA testing.
Section 7, Reference. Add: #1 Personal communications with Ozone Engineering, Inc. and Ozone Water Systems, Inc. #2 and #3 Personal communications with BAAQMD.

Signatures:

Revised by: **New version[c]:** **Date:**
Revisions/additions:

Signature:

Revised by: **New version[c]:** **Date:**
Revisions/additions:

Signature:

ANNUAL REVIEW[d]

Signature	Date

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UCSF HUMAN EXPOSRE LABORATORY OZONE GENERATION

1. SCOPE OF APPLICATION:

1. To safely generate and maintain 70 and 120 parts per billion (ppb) ozone concentration.

2. PREREQUISITES:

1. Training.
    1. The individual generating the ozone concentration should be able to demonstrate familiarity with the Polymetrics Ozone Generator and the procedural steps to generate a 70 and 120 ppb ozone.
    2. Demonstrate familiarity with operating the ozone analyzers, the chamber environmental controls, associated software programs (LabView, and Excel), Standard Operating Procedures (SOP), and handling gas cylinders.

2. Equipment and supplies.
    1. Ozone Generator: Polymetrics, Inc.; Ozone Product Line, San Jose, CA; Model #: T-408, SR#: 2631.
    2. 5 % Oxygen, Balance Helium ~200 CF cylinder. UCSF Gas Distribution; Airgas (NCN-San Jose (SAP)-CA, 441 Hobson St., San Jose, CA 95110. 408/998-6390, www,airgas.com); Order #: XO2HE95C2003182.
    3. Regulator Valve Outlet: 580.
    4. Re-circulating Water Supply: B. Braun Thermomix 1460, Type: 850 063, SR# 267, Made in W. Germany, Melsungen AG., UC#: 77-20-02875.
    5. Ozone Analyzer: Certified unit: TAPI400E58: Teledyne API, Advanced Pollution Instrumentation Division, 9480 Carroll Park Dr., San Diego, CA 92121 800/324-5190 http://www.teledyne-api.com/; Advanced Pollution Instrumentation Photometric Ozone Analyzer Model 400E; S/N#: 058.; Daily Use unit: TE49C: ThermoEnvironmental Instruments, Franklin, MA 02038. 866/282-0430 toll free; 508/520-0430; Model 49C; Ozone Analyzer; SR#: 49C-78830-389.
    6. Standard Operating Procedures: UCSF Human Exposure Laboratory Chamber LabVIEW SOP, UCSF Human Exposure Chamber WebCTRL SOP.

3. CAUTIONARY NOTES OR SPECIAL CONSIDERATIONS:

1. The chamber should not be left unattended when generating ozone.
2. Gas tanks should be properly secured at all times.
3. Monitor ozone concentration and adjust as necessary (±5%).
4. The frequency at which the TAPI400E58 Ozone Analyzer displays the ozone concentration varies with the ozone concentration stability. When the ozone concentration is stable the averaging time can be over 1.5 minutes, and when not stable (i.e. rapidly changing) it can be as frequent as every 18 seconds.
5. The TE49C Ozone Analyzer is set to display the ozone concentration every 10 seconds. The final reported ozone concentration is recorded on LabView and

offset corrected. The offset correction is the averaged charcoal scrubbed ozone concentrations measured for 2 minutes pre and post exposure.

6. Except when being serviced, run the TAPI400E58 and TE49C Ozone Analyzers simultaneously during the study exposure.
7. Manually record the ozone concentration measured by the TAPI400E58 and TE49C Ozone Analyzers every 5 minutes.
8. Preventive Maintenance for the ozone analyzers are performed by the Bay Area Air Quality Management District (BAAQMD).

4. PROCEDURES

1. Environmental Chamber.
    1. Follow the UCSF HEL Chamber WebCTRL SOP.
2. Record the ozone generation data on the Excel "Ozone Generation Worksheet" (OGW).
    1. Rename the OGW: "Study (optional), SubjectID#, Visit Date, Ozone Generation Worksheet".
        1. E.g.: "MOSES ##### MMDDYYYY Ozone Generation Worksheet and save to the specific subject data folder.
3. Pre Ozone Generation Checks.
    1. Check for adequate (>200 psi) supply gas (5% oxygen, balance helium).
        1. Average consumption: 50 psi / 3 hour exposure.
    2. Ozone Analyzers.
        1. As protocol defined, power up the TE49C (daily use) and TAPI 400E58 (standard) ozone analyzer(s) and allow to warm up and self – check for 30 minutes.
        2. Determine the ozone off set.
            1. Consult the UCSF HEL Chamber LabVIEW SOP.
    3. B. Baun Thermomix 1460 recirculating water supply.
        1. Fill the reservoir with ice, and then fill with water.
        2. Pack the space between the reservoir and the styrofoam box with re-useable frozen ice packs.
        3. Place the thermometer in the reservoir, and turn on.
        4. Turn the B. Braun Thermomix on, visually confirm adequate flow in and out of the ozone generator, and record the reservoir temperature on the OGW.
4. LabVIEW Program.
    1. Consult the UCSF HEL Chamber LabVIEW SOP.
5. Ozone Generation.
    1. Begin generating zone at least 45 minutes prior to the scheduled exposure.
    2. Turn the supply gas (5% oxygen, balance helium) on.
        1. Turn the gas regulator counter–clock-wise (CCW) to stop, and then back turn ¼ turn clock–wise (CW).
        2. Adjust the flow rate: 10 psi.
    3. Confirm adequate circulating water with the B Baun Thermomix 1460.
        1. Record water reservoir temperature.
            1. Acceptable: < 21°C/71°F.
    4. Polymetric Ozone Generator .
        1. For Filter Air (0 ppb ozone concentration).
            1. Do not turn on the supply gas.

        2. Do not turn on the Polymetrics Ozone Generator.
    2. For 70 ppb ozone concentration
        1. Set the ozone generator power to 0 Volts.
        2. Toggle the white switch up, (red light should illuminate).
        3. Note the OCTOC.
        4. Initial setting:
            1. Power: 28 Volts.
            2. Pressure: 1.5 psi.
            3. Ozone flow: 0.46 sLpm.
        5. Adjust "Ozone flow" as necessary (± 5% OCTOC, (66.5 – 73.5 ppb)).
    3. For 120 ppb ozone concentration.
        1. Set the ozone generator power to 0 Volts.
        2. Toggle the white switch up, (red light should illuminate).
        3. Note the OCTOC.
        4. Initial setting:
            1. Power: 30 Volts.
            2. Pressure: 1.8 - 2.2 psi.
            3. Ozone flow: 1.1 - 1.5 sLpm.
        5. Adjust "Ozone flow" as necessary (± 5% OCTOC, (114 – 126 ppb)).
5. Polymetrics Ozone Generator Shut Down.
    1. Power down to 0 Volts.
    2. Flush Polymetrics Ozone Generator for 30 minutes with gas and re-circulating water.
    3. After 30 minute flush:
        1. Turn the B. Baum Thermomix 1460 off.
            1. Remove the thermometer.
            2. Return the re-useable ice packs to the freezer (Room 151).
            3. Drain the water from the reservoir.
            4. Wipe up any spills.
        2. Record gas tank volume balance, and turn off.
            1. Order tank when volume: ≤ 1000 psi.
    4. Turn the Polymetrics Ozone Generator off.
        1. Toggle the white switch down, (red light should not illuminate).
6. Save data collected.
    1. Ozone Generation Worksheet (OGW).
        1. Save.
    2. Consult UCSF Human Exposure Laboratory Chamber LabVIEW SOP.
    3. Consult UCSF Human Exposure Laboratory Chamber WebCTRL SOP.

5. QUALITY CONTROL

1. Allow ozone analyzer to perform self-checks during warm up period and report any discrepancies.
2. If the recurring average difference between the TAPI400E58 and TE49C Ozone Analyzers are ≥ 5.0 %, contact BAAQMD for service and QA testing.
3. Ozone Analyzer Preventive Maintenance and Biannual Certification performed by BAAQMD.

6. INFECTION CONTROL

1. Empty the B. Baun Thermomix 1460 reservoir.

7. REFERENCES

1. Operation and Maintenance Manual for Standard, T series Ozone Generator and personal communications with Ozone Engineering, Inc. and Ozone Water Systems, Inc.
2. Teledyne Advanced Pollution Instrumentation Photometric Ozone Analyzer 400E Manual and personal communications with BAAQMD.
3. ThermoEnvironmental Instrument Model 49C UV Photometric Ozone Analyzer Manual and personal communication s with BAAQMD.
4. UCSF Human Exposure Laboratory Chamber LabVIEW SOP.
5. UCSF Human Exposure Laboratory Chamber WebCTRL SOP.

CEMALB Standard Operating Procedure (SOP)

TITLE: UCSF, Human Exposure Laboratory Chamber WebCTRL

Version: 1.0 **Directory/file[a]:** //Shared on 'CEMALB/QA/SOPS/'

Author: H Wong **Signature:** **Date: September 24, 2012**

Revised by: **New version[b]: 1.1** **Date: 9 April 2013**

Revisions/additions:

Section 2.2. Stainless steel chamber: more detailed description provided.
Section 4.1. Dell Optiplex 745 Computer: Clarified the steps to log in to the WebCTRL
Section 4.7. Download the Chamber Environmental: more detailed procedure steps provided.
Section 4.8 and 4.9. Post Exposure Chamber Maintenance Protocol: As requested, protocol for cleaning the chamber following exposures described.

Signature:

Revised by: **Hofer Wong** **New version[b]: 1.2** **Date: 31 July 2013**

Revisions/additions: Amend chamber cleaning to ventilate chamber overnight (previously 30 minutes)

Signature:

Revised by: Hofer Wong, Suzaynn Schick, and John Balmes.
New version[b]: 1.3 **Date: 22 April 2014**

Revisions/additions: Section 2.2: Add electric heater to list of equipment and supplies.
Section 4.1.8.2: Add heating the chamber overnight and venting the chamber for 48 hours after a Second-Hand-Smoke exposure. These cleaning amendments were implemented November 13, 2013.
Signature:

ANNUAL REVIEW[c]

Signature	Date

SOP UPDATED TO VERSION [d]

Explanations: [a] Incorporate the version of SOP into the file name, e.g., Ind_sputum_v10_sop.

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UCSF HUMAN EXPOSURE LABORATORY EXPOSURE CHAMBER WEBCTRL

1. SCOPE OF APPLICATION:

1. To control the temperature and humidity in the Human Exposure Laboratory Chamber by WebCTRL.

2. PREREQUISITES:

1. Training:
    1. The individual should be able to demonstrate familiarity with the Dell Optiplex 745 Computer, WebCTRL, the air path into and out of the chamber and associated equipment ventilating the chamber.

2. Equipment and supplies:
    1. Dell Optiplex 745 Computer
    2. WebCTRL
    3. Dehumidifier: (Cargocaire Engineering Corp., 79 Monroe St., Amesburg, MASS. 01913. Model HC-575-EA; SR#: 893; Wiring diagram: 50085; General Assembly: 20285; Installed: 6/88. SVC/Parts: 617/388-0600)
    4. Filters: Pleated Med Eff Filters, Purafilter, HEPA Filter
    5. Chiller (Air Cooled) : Dunham-Bush Chiller, Model: AC5AO, SR#: 71572701A91E. Dunham-Bush, 836 West 18th St., Hialeah, Florida 33010 305/883-0655 email:info@dbamericas.com
    6. Supply Fan: PACE
    7. Humidifier: Nortec, Ogdensburg, NY; Otawa Ontario, Canada. Model NHMC-050, SR# 1D607156552.Parts: TEMPCO Equipment Co., P.O. Box 400, 100 North Hill Drive, #12, Brisbane CA, 94005 415/467-8680 Sacramento, CA 916/451-2891
    8. Exhaust Fan: Twin City Fan and Blower
    9. Stainless Steel Chamber: NorLake, Walk-in Panel, R8058, Nor-Lake Inc, Underwriters Lab., Inc. Classified as Build in unit, 36M.4., 544 Sq. Ft. (8.3’ X 8.3’ X 7.9’)
    10. Electric heater: Broan-NuTone L.L.C., Model 6201-A, 1500 W, 10 Amp, , Hartford WI.

3. CAUTIONARY NOTES OR SPECIAL CONSIDERATIONS:

1. Ensure all equipment and associated parts are connected to the WebCTRL and properly working.

4. PROCEDURES

1. Dell Optiplex 745 Computer
    1. Power on.
    2. Log on to the Internet Explorer
        1. Default site: http://1-152-hw/
            1. Log in with assigned name and password.
    3. Place the mouse curser over the “Environmental Chamber”, and single LEFT click

4. Turn WebCTRL on.
    1. Place the mouse curser over the Override: “On / Off” option and single LEFT click to toggle to “On”.
    2. Move the mouse curser to the ACCEPT / CANCEL option (located above and to the left of the “DDC Control Drawings” sign), and single LEFT click.

5. Settings
    1. Temperature
        1. At the Chamber Setpoint Server (beneath the chamber cartoon), highlight the existing temperature displayed and over write with the desired temperature (°F).
        2. Move the mouse curser to the ACCEPT / CANCEL option (located above and to the left of the “DDC Control Drawings” sign), and single LEFT click.
    2. Humidity Control
        1. At the Chamber Setpoint Server (beneath the chamber cartoon), highlight the existing humidity displayed and over write with the desired humidity (%).
        2. Move the mouse curser to the ACCEPT / CANCEL option (located above and to the left of the “DDC Control Drawings” sign), and single LEFT click.
6. Monitor
    1. Check the cartoon for the operational status of the supply fan, dehumidifier, chiller, humidifier, and exhaust fan.
7. Download the Chamber Environmental (temperature and humidity) Conditions
    1. LEFT click on the downward pointing triangle located at the upper right corner of the graphic display; “Main Menu.”
        1. LEFT click the “Time-lapse” option
        2. Set up the Time-lapse
            1. Replay: Select the time interval desired: 1, 4, 8, 12, or 24 hours.
            2. Start: Select the start date and time
            3. End: Select the end date and time.
            4. Select “OK” and wait for a new window display.
    2. Place the curser over the new chamber temperature/relative humidity graphic display and single RIGHT click
    3. Scroll down to , “Copy data to clip board (CTRL-C)” and single LEFT click
        1. Single RIGHT click OK to Web page Dialogue: “Trend data copied to clipboard.”
    4. Open the subject’s OGW and then the “WebCTRL Chamber Data” sheet located at the bottom of the worksheet.
        1. Paste the data from the clip board into the A:1 cell.
        2. If necessary format column A to display data as date and time.
        3. Review data, select and average the temperature and humidity measured during the exposure, and report.
        4. Save.
8. Post Exposure Chamber Maintenance Protocol
    1. Ozone / Filter Air
        1. Flush chamber with filtered air (without ozone) for at least 30 minutes
        2. All measurements should be in the background range.
    2. After All Nicotine: Second-hand-smoke
        1. Wear personal protective equipment (PPE).
        2. Sweep the floor
        3. Prepare 8 L of 70% ethanol: 30% deionized water.

4. Wipe all surfaces (wall, ceiling, floor, window and treadmill) with a clean terry cloth mop and cloth soaked in 70% ethanol.
5. Ventilate the chamber for one hour.
6. Turn WebCTRL off.
7. Set the portable electric heater in the chamber and set to maximum temperature.
8. Heat the chamber overnight.
9. The next day, turn the heater off and remove it from the chamber. Turn WebCTRL on and ventilate the chamber for the next 48 hours.

3. Quarterly Chamber Cleaning: January, April, July, and October.
    1. Wear personal protective equipment (PPE).
    2. Sweep the floor
    3. Prepare 1) 8 L of a general labware detergent according to manufacturers' instructions, 2) container of hot tap water, and 3) container of dionized water.
    4. Wipe all surfaces (wall, ceiling, floor, window and treadmill) with a clean terry cloth mop and cloth soaked in the detergent solution.
    5. Rinse mop and rags in hot water after wiping every square meter.
    6. Rinse all surfaces three times with deionized water.
    7. Prepare 8 L of 70% ethanol: 30% deionized water.
    8. Wipe all surfaces (wall, ceiling, floor, window and treadmill) with a clean terry cloth mop and cloth soaked in 70% ethanol.
    9. Ventilate the chamber overnight.

9. Turn WebCTRL off.
    1. Place the mouse curser over the Override: Single LEFT click to toggle for "ON / Off".
    2. Select the ACCEPT / CANCEL option (above the DDC Control Drawings signage)
        1. Move the mouse curser to ACCEPT and LEFT click.
10. Leave the Dell Optiplex 745 computer on and log off.

5. QUALITY CONTROL

1. Not applicable.

6. INFECTION CONTROL

1. Not applicable.

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7. REFERENCES

1. General labware detergent: MSDS