

Job Hazard Analysis

JHA Number 0029-PPD-EHS	Facility University of Vermont	Date Prepared 7/22/2019	Revision Date
Approved by		Analysis by WALKER, CHRISTOPHER	
Description Greenhouse Evaporative Cooling Testing			
Smart Tabs			
Related Job Titles	Related Departments * MEDICAL COMPLEX ZONE	Related Locations	Related MSDS
Training Requirements			

Additional Description
Greenhouse Evaporative Cooling Testing, Houses 1,2,3,4,5,6,7,8,9 &10 Testing to be done on Tuesday and Thursdays, also dipslide testing on Thursdays.
Common sense should be applied when executing any job. We do our best to implement hazard control measures such as engineering controls, administrative controls and personal protective equipment. When the hazard is still present the use of certain PPE may be required for one or more steps but not all of the steps. However, it may be prudent to don all required PPE for the duration of the JHA.

Step/ Area	Task Step Description	Hazards	Control Measure	PPE Required
1	Post hazard signs on doors where chemicals are being added Insure all houses are running. If not, have Greenhouse employee's turn them on for a minimum of 1hr to insure water has circulated through pit pads and chlorinator. This is to insure chemicals have been stirred up before proceeding with water testing for Free Chlorine, Conductivity and PH. Make sure to have clipboard with test sheet information to write results on.	Chemicals Slips	All work should be conducted with the knowledge of the greenhouse employee's. Contact them prior to the start of any work. PPE shall be employed at all times	Safety glasses, without sideshields (100727); Shoe/boot, steel-toe, slip-resistant sole
2	Now that system has run for a minimum of 1hr, grab the grey fishing tackle box located by heating hot water system and set up on table to proceed with testing of houses waters.	Chemical Slips	Take care when walking on wet surfaces	Safety glasses, without sideshields (100727); Shoe/boot, steel-toe, slip-resistant sole
3	Set up free chlorine tester, (black 4"square box that has a color wheel and two test tubes with it). Take beaker, go to pit where pump station is and draw water from shutoff valve on 2" white pvc line, rinse it three times and on fourth time save water. This is to insure you have rinsed last house water from glass beaker.	Chemical Slips	PPE Take care when walking on wet surfaces	Safety glasses, without sideshields (100727); Shoe/boot, steel-toe, slip-resistant sole; Gloves, chemical resistant, nitrile rubber (802746)

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4	<p>Take 5ml/10ml test tube and fill it with water and insert into square box, in hole on left side as you look at it.</p> <p>Next take water from beaker and fill other test tube to the white line (5ml)</p> <p>Take One DPD free chlorine packet (1" silver packet) put contents into test tube. Shake the test tube and for a minute to insure contents mixes.</p> <p>Insert test tube into other hole in square box on right side and then turn the color wheel to compare to sample.</p> <p>Turning the color wheel until colors match each other, look at bottom of color wheel will say how much chlorine is in system. (0-4ppm)</p>	Chemical	PPE	Safety glasses, without sideshields (100727); Shoe/boot, steel-toe, slip-resistant sole; Gloves, chemical resistant, nitrile rubber (802746)
5	<p>Put numerical information onto test sheet.</p> <p>You are looking for a number between .5-1.5ppm.</p> <p>If you do not get in the range, you will have to go to chlorinator.</p> <p>Move the chlorinator valve either up or down depending which way you need to move the numbers from reading. (Always start at 1 and you should never have to open it to anymore then 3 on valve). Doing this either allows more chlorine to be introduced into pit or less depending on number dialed in on valve.</p> <p>Dump right test tube out after test. (water should be dumped into the bucket)</p>	Chemical		Safety glasses, without sideshields (100727); Shoe/boot, steel-toe, slip-resistant sole

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Step/ Area	Task Step Description	Hazards	Control Measure	PPE Required
6	<p>Testing for Conductivity and PH with Myron Ultra digital meter. Take meter, using upper left hand hole , rinse it three times with water from beaker then put sample of water in hole from beaker.</p> <p>Push Conductivity button on meter and wait for digital reading. Record reading from meter on sheet under Conductivity in proper house number slot.</p> <p>If water test is high (ie: 1200ppm) you would then go to small line on side of pad header (bleed valve located with numbers) you would increase number (ie: if on 2 you would increase to 3.</p> <p>If low (ie: 200ppm) then you would close the bleed valve to raise numbers from test) Leave until next test time. Dump water from the meter hole.</p>	Chemical Slips	PPE Take care when walking on wet surfaces	Safety glasses, without sideshields (100727); Shoe/boot, steel-toe, slip-resistant sole; Gloves, chemical resistant, nitrile rubber (802746)
7	<p>PH Testing: Remove the black cap on meter. Using the remaining water from beaker, rinse three times and fill hole with water. Push PH button and wait for reading. Record reading on test sheet for correct house testing. The number should be between 7&8. If reading is below 7 the water is acidic If the number is above 8 then alkalinity is higher. Both of these results have problems associated with them. Acid will eat away at parts and materials and alkalinity not good either. Once test is done put black cap back on leaving water in hole so insert will not dry up.</p>	Chemical Slips	PPE Care while walking on wet surfaces	Safety glasses, without sideshields (100727); Shoe/boot, steel-toe, slip-resistant sole; Gloves, chemical resistant, nitrile rubber (802746)

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8	<p>On Thursdays Take a box of "Easicolt dipslide test" Run the dipslide under water from each house (1-10) Put it into test vial and write house number on it. Return to Danny's office where these will sit in a controlled room temp of 70 deg F for 72 hrs before reading results. Testing for fungus & bacteria. You should not see anything, or nothing above 10th to the fourth. Refer to the paperwork supplied with Easicolt dipslides. Show the results to the Greenhouse contact Employee</p>	<p>Chemicals Bacteria, fungus</p>	PPE	<p>Safety glasses, without sideshields (100727); Gloves, chemical resistant, nitrile rubber (802746)</p>
9	<p>Problems to watch out for are:</p> <p>Too much chlorine will cause staining of pads, higher numbers in testing, strong chlorine odors, equipment failure of sump pump</p> <p>All waste water from testing that has been placed in the bucket shall be disposed of down the house drain in the floor</p> <p>Pads turning green (alga growth) not correct control of chlorine or other problems with control.</p> <p>Need to keep eye on broken parts or tubing. UV light breaks done tubing etc and chlorine does also.</p> <p>Check for equal water flowing over pads and any leaks on system.</p> <p>Show all results to Greenhouse employee's</p> <p>KEEP eye on amount of Bromide pucks (no more than three at time in chlorinator) insure you use all PPE when checking or adding pucks.</p> <p>Insure to show results of Chlorine, Conductivity, PH and Dipslide to Greenhouse employee's</p>			

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Prepared By: _____ **Date:** _____