



The Four Seasons at Palm Springs ***Palm Springs, CA*** **Cleared of Legionnaires Outbreak** **Attributes Success to *HydroFLOW* Technology**

September 5, 2018

Riverside County Department of Environmental Health gives the 'All clear' to re-open all pools, spas, showers and drinking fountains at the Four Season at Palm Springs community. The facility was closed for nearly three months due to Legionnaires' outbreak.

Background:

January 2018

Doctors' diagnosis two residents with Legionnaires disease.

June 22, 2018

Riverside County (California) Department of Environmental Health received notice of Legionnaires disease among two residents and requested Chem Inc, Center for Disease Control (CDC) Elite Program, to test facility for Legionella bacteria.

July 3rd, 2018

Testing was analyzed by Chem Inc, eleven areas tested above acceptable levels in Legionella bacteria.

Four Season Palm Springs (FSPS) Management sent letter to residences stating, "We regret that we had to advise tenants that out of the 50 tests performed, there were eleven (11) areas that tested positive for Legionella. We had to shut down these locations."

FSPS Management inform residents of their intentions to install a new innovative green technology called Hydroflow.

KC's 23 ½ hour Plumbing installed *HydroFLOW* HS40 Professional Grade units at the locations where CDC detected levels *4 & 5.



July 26, 2018

After 23 days using only *HydroFLOW* HS40 Professional Grade units preliminary testing was performed using Spartan Legionella Detection Systems. (This test is more sensitive than the current CDC testing) The results showed a very large reduction in Legionella counts. In ALL locations the counts were reduced from *Class 4 & 5 levels (Outbreak levels) to Class 3 (low level of concern). Class 3 is a passing scores with CDC and OSHA guidelines at less than 10 CFU’s/ml of bacteria.

August 2, 2018

Chem Inc. (CDC’s Elite Program) re-tested all eleven (11) locations. These results confirmed Spartan’s earlier tests results. (See below chart).

Chem Inc. Results on Bacteria Data

| <u>Location:</u> | <u>Date</u> | <u>Date</u> | <u>Date</u> |
|---|--------------------------|----------------------------|----------------------------|
| Four Season at Palm Springs Palm Springs, CA | 6/20/18 | 8/2/18 | 9/4/18 |
| | Legionella CFU/mL | Legionella CFU’s/mL | Legionella CFU’s/mL |
| East wall fountain filter | 60 | Non-detected | |
| East shower covered bulk | 50 | 4 | Non-detected |
| East shower outside swab | 10 | 1.5 | Non-detected |
| East drinking fountain swab | 210 | Non-detected | |
| West pool filter | 20 | Non-detected | |
| West spa filter | 90 | Non-detected | |
| West shower covered swab | 10 | 1 | Non-detected |
| West shower covered bulk | 60 | 1 | Non-detected |
| West shower outside swab | 430 | 0.5 | Non-detected |
| West drinking fountain swab | 1300 | Non-detected | |
| West drinking fountain bulk | 113 | 2 | Non-detected |

The Swift response by Four Seasons at Palm Springs management team and their decision to use *HydroFLOW* treatment resulted in a reduction in all eleven (11) locations from Class 4 & 5 (outbreak levels) to non-detectable *Class 1-“The presence of barely detectable number of Legionella represents a low level of concern”.



Notes:

The Board was pleased with **HydroFLOW** HS40 Professional Grade unit's performance at effectively and significantly diminishing the percentage of Legionella in the areas tested on July 26th by Spartan Legionella Detection Systems and confirmed on Aug. 10th by Chem Inc.

**The State of California does not have any acceptable minimum standards enumerating the CFUs (Colony-forming units) per milliliter for Legionella bacteria in potable water. New York is the only state which has minimum standards, and is set at 20 CFUs. Canada has minimum standards, and is set at 10 CFUs. OSHA, the Occupational Safety and Health Administration, has guidelines which specify 10 CFUs.*

****As all FSPS counts were Level 3 and under at second testing - using these standards and guidelines the facility would have been available to re-open on July 26th, 2018. ****

On Aug. 15th 2018 regarding the Aug. 2nd lab results, Riverside County Doug Osborn, Supervising EHS District Environmental Services of Environmental Health County Of Riverside, California (REHS) advised Jim Rush General Manager Four Season FSPS that REHS would not accept the test results (Any result over non-detectable) due to liability issue. Therefore, FSPS could not reopen the facility at this time. Mr. Osborn did comment that everyone at REHS was impressed with the **HydroFLOW** results. (Significant reduction in the presence of Legionella bacteria in the areas re-tested in static and circulating water systems).

The FSPS Board met in an Emergency Executive session to discuss the findings and authorized KC's 23 ½ Hour Plumbing to replace the pipes in the event that any positive results were detected. Kelly Russum, owner KC's 23 1/2 Hour Plumbing, stated if given a few more days the Legionella bacteria counts would continue to drop to REHS acceptable levels. FSPS Board, in its diligence, did not want to rely on only one single cleaning criteria. Even though CDC and OSHA standards had been met, and approximately 99.9% of the threat had been resolved, REHS wanted to achieve total non-detect in ALL locations surpassing even CDC & OSHA Standards. The Board requested an additional secondary water treatment procedure to be implement on the hot water lines to the showers in conjunction with **HydroFLOW**. Three days of Hyperthermal flushing was used on the water heaters at the east and west showers and pools by raising the temperature to 165 degrees. No Hyperthermal flushing was feasible on the cold water lines and those locations were solely treated with **HydroFLOW**.

Once the hyperthermal flushing was completed, Chem, Inc. re-tested the six areas. Test was performed on Tuesday, August 27th.

August 27th results were Exemplary! Non-Detectable in ALL locations. Notice the cold water lines were treated only with **HydroFLOW** and came back Non-Detectable - from Class 5 level to Non-Detectable.



If you have any questions, please contact:

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Center for Disease Control – Potable Water Action Criteria for Legionella:

- *Level 1- Review routine maintenance program recommended by the manufacturer of the equipment to ensure that the recommended program is being followed. The presence of barely detectable number of Legionella represents a low level of concern.
- *Level 2 – Detectable – but <1 CFU/mL
Review routine maintenance program recommended by the manufacture of the equipment to ensure the recommended program is being followed. The presence of barely detectable number of Legionella represents a low level of concern.
- *Level 3 – Implement Action 1 – 9 CFU/mL
Conduct follow-up analysis after a few weeks for evidence of further Legionella amplification. This level of Legionella represents little concern but the number of organisms detected indicates the system is a potential amplifier of Legionella.
- *Level 4 – Implement Action 10 - 99 CFU/mL
Conduct review of premises for the direct and indirect bioaerosols contact with occupants and health risk status of people who may come in contact with bioareosols.. Depending on the results of the review of the premises, action related to cleaning and/or biocides treatment of the equipment may be indicated. This level of Legionella represents a low but increased level of concern.
- *Level 5 - Implement Action 100 – 999 CFU/mL
Cleaning & biocide treatment. This level represents a moderately high level of concern, since it is approaching levels that may cause outbreaks. It is uncommon for samples to contain numbers of Legionella that fall in this category.
- *Level 5 - Immediate Action Greater than 1000
Cleaning and/or biocide treatment of the equipment is definitely indicated a potential for an outbreak. Conduct post treatment analysis to ensure effectiveness of the corrective action. The amount represents a high level of concern, since it poses the potential for causing an outbreak. It is very uncommon for samples to contain a number of Legionella that fall in this category.

*Legionella: Current Status and Emerging Perspectives.

-Barbaree, Breiman, Dufour: ASM