

GUST ENVIRONMENTAL

ESTABLISHED 1993

Specializing In Indoor Environmental Health Factors • Inspection • Testing • Consulting • Solutions

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Wednesday, February 22, 2006

Mark Walsh
LLC Manager
SolCool
525 Amigos Dr. Ste 5
Redlands, CA 92373

Dear Mr. Walsh,

All air, inside and outside, contains particulate matter of varying diameters ranging from 100 microns (millionth of an inch) to less than 0.002 microns. These particles include fine vegetative matter, mold spores, plant pollens, animal and human particles, bacteria, virus, combustion by-products, mineral dusts and industrial pollutants.

Particulates over about 3 microns are easily removed via the body's mucus membranes. Unfortunately, particles under about 0.5 microns penetrate deeply into lung tissue and are difficult to remove. Surprisingly, fine particles under 0.5 microns comprise 98% of the particle sizes in the air. SolCool air conditioners remove particulate from the air

Gust Environmental was hired to define the extent of particulate removal. On February 22, 2006 Lawrence Gust performed an evaluation of a SolCool air conditioning system installed in a conference/meeting room at SunEarth, Inc. This unit was evaluated for its ability to remove particulate matter from the air through the air scrubbing action in the vortex section of the air conditioning unit.

This was a carpeted conference room with an enclosed area of approximately 6000 cubic feet in volume. The room kept closed up two hours before the test to the conclusion of the test except for normal entry and exit by the people conducting the test.

The SolCool unit was installed on the mezzanine above the conference room. The air circulation is a closed loop system with the same air being returned to the air conditioner as is supplied to the room. The cool air supply vent was located in the ceiling at the center of the room. The vent grill provided for air distribution in four directions. The return air duct was located in the ceiling about 15 feet away from the supply. The air volume was reported to be about 800 cubic feet per minute resulting in one room air change every 7.5 minutes. The return air grill was equipped with the *Web Odor Control Filter* by Web Products, Inc. This filter had moderately efficient filtration rating of MERV 9¹.

¹ Standard fiberglass furnace filter are rated at MERV 2, while high performance HEPA type filters are rated at MERV 19

Measurement of the air particulate content was done with a *Met One Laser Particle Counter* that reports the number of particles 0.3 microns and larger per cubic foot of air.

Particle counts were taken at the four locations- the corners and at the center of the room. A measurement set was taken at 10:55 am before the SolCool unit was started and then every 20 minutes² after for a total of four measurement sets. The SolCool unit was started at 11 am. The data are shown below:

Particles Per Cubic Foot of Air (p/ft³)

Time	1	2	3	4	5	Average
10:55	1,071,000	1,074,000	1,098,000	1,090,000	1,118,000	1,090,000
11:20	765,000	750,000	730,000	747,000	749,000	748,000
11:40	690,000	680,000	675,000	673,000	680,000	680,000
12 noon	630,000	618,000	625,000	613,000	617,000	621,000

Particle Reduction Over Time

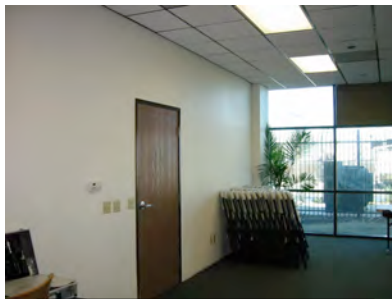
Time	Average p/ft ³	Particle Change %
10:55	1,090,000	Base
11:20	748,000	- 31.4
11:40	680,000	- 37.7
12 noon	621,000	- 43.0

As can be seen from the above data there is a clear downward trend in the average air particle count over the one hour test duration. This trend could be expected to continue until the removal capability is overcome by the leakage of dirt laden outside air into the room through normal gaps in the building envelope.

Sincerely,

Lawrence J. Gust

Lawrence J. Gust
Gust Environmental



Conference Room



Supply Vent



Return Vent



SolCool Unit on Mezzanine

² 2.67 room air changes in 20 minutes