

Corona High School Air Quality Problem
March 2008

I. PROBLEM

HVAC equipment is undersized and does not meet ASHRAE or the School Board Facilities (SFB) fresh air standards. 90 % of original mechanical equipment is still operational.

Normal design for a standard class is **5 tons of cooling**.
Some classes only have **3 tons**.

RESULT: Almost impossible to cool to an acceptable temperature when it is hot.

In 1977 code requirements were:

- **5 Cubic Feet per Minute** of fresh air/person
- Designed to serve **20 students** per class

Life expectancy of equipment = 20 - 25 years

Today, code requirements are:

- **15 Cubic Feet per Minute** of fresh air/person
- Class sizes are **30-35 students**

Corona equipment = 30 years

COST TO FIX PROBLEM: \$17 million

Tempe Union High School District has taken the position that the current system is posing a serious threat to the functioning of the school and the health and welfare of the occupants.

II. HISTORY of CORONA BUILDING and Air Quality

Built in 1977 during energy crisis. Goal was to have solar and an airtight school, therefore *mechanical space above ceiling was reduced.*

RESULT: Stagnant air and difficulty in upgrading to units large enough to meet current needs.

2001 Corona Inspection by SFB: They decided Corona's equipment met minimum standards AND Corona was recognized for its well-maintained equipment. Note: SFB replaced similar systems to Corona in almost all schools at this time. When going on site to Arizona schools, Corona's maintenance program preserved our equipment so well that it looked significantly better than what they were seeing on average.

Problems with SFB inspection:

- o Tested CO2 prior to school day when classes were empty
- o Testing equipment did not meet professional standards

Corona questioned the SFB about their methods. Prior to this time, the school had had complaints by staff and students.

2002 Versar Inc. was hired to investigate complaints COST -

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- o Headquarters in Virginia <http://www.versar.com/aboutus.htm>
- o Environmental engineering company
- o helps clients with six main tasks: compliance with environmental regulations, conservation of natural resources, construction oversight, engineering and design, pollution prevention, and restoration of contaminated sites

2003, 2004, 2005, 2007 Prime Consulting was hired COST -

- o a **full-service** Environmental, Health, Safety consulting firm founded in 1995 and Incorporated in the State of Arizona in 1997 <http://www.primeconsultinginc.com>
 - a. Took air samples because of mold smell complaints - most areas found to be normal. Abatement of small areas was needed where problems were detected
 - b. Almost all reports noted that Inadequate ventilation can contribute to increase in humidity and this in turn reduces air capacity to dry and can promote mold.

RESULT: Accumulation of indoor pollutants is not being diluted by fresh air

August 2006: Staff had a concern regarding a cancer cluster and felt school was making them sick.

- o District asked **Az. Schools Risk Retention Trust** for help in investigating this. http://www.the-trust.org/guests/Sept99_newsletter.html

Health Effects Group Inc. was then hired (9/06) to perform indoor air quality assessment (founded in 1988, is dedicated to providing state-of-the art environmental and occupational health services.) http://www.healtheffectsgroup.com/heg/new_heg/index.htm Dr. Van Ert and Shannon Newton were the two professionals working on this case. info@healtheffectsgroup.com

Corona's Indoor Air Quality Assessment Report

<https://www.tuhsd.k12.az.us/insidetuhsd/HealthEffectsGroupReport.pdf>

- a. During normal day carbon dioxide (CO₂) builds up in occupied areas and measurements exceeded ASHRAE standards and Sib's for air quality.
- b. **ASHRAE recommends** a difference between indoor and outdoor CO₂ concentrate **no greater than 707 parts per million**

RESULT: On 9/15/06, Corona's measurement exceeded 2000-3000 parts per million in some areas and 707 at nearly ALL occupied sample locations

NOTE: There were 2 proposals on the table regarding what to investigate: Air quality was one, the other health concerns. Only the Air Quality study was okayed to do by AZ. Schools Risk Retention Trust.

May 2007 TUHSD formally asked the School Facilities Board (SFB) for funds

June 2007 TUHSD was *denied* funds by SFB

District attorney, Spencer A. Smith, ssmith@dmyl.com 520-322-5000 (DeConcini McDonald Yetwin & Lacy, P.C, <http://www.deconcinimcdonald.com>)

Explained that it is understood that the SFB doesn't have the ability to fund project, but TUHSD is asking this board to acknowledge the emergency and give the

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District whatever funds are available. The District would then go to the Board of Supervisors for the balance.

August 2007 Mr. John Arnold, Executive Director of the SFB (jarnold@azsfb.gov 602-542-6147) denied request based upon determination the CO2 levels DID NOT constitute an emergency. Also said identified levels were below OSHA requirements and District had a right to appeal.

NOTE: One concern the SFB raised was the estimated cost of this project: \$17 million. Contributors to high cost:

- 1) Schools need to remain open during modification
- 2) Current 30-year old electrical service & infrastructure must be upgraded to support load of new system
- 3) The roof, energy management system, duct work, ceiling grid and tile need to be replaced.

September 2007 TUHSD submitted a **letter of appeal**. A hearing was set for 1/25/08

February 2008 **Judge Lewis Kowal** upheld SFB decision to deny funding

February 2008 TUHSD **joined as a plaintiff** in the Williams Unified School District and Sierra Vista Unified School District versus State of AZ lawsuit. Tim Hogan, from the Center for Public Law is the attorney representing TUHSD. <http://www.aclpi.org/default.htm> (If ruling is favorable, HVAC project could be completed by 2012-2013

III. District Action To Date

Winter Break 2007:

- 1) Using District's current building renewal funds, the process to remove materials that have contributed to causing mold or increasing the relative humidity has begun. To date, **all carpet in hallways has been replaced with tile.**
- 2) Mechanical design teams with architects have begun developing new mechanical systems that will permanently resolve the situation.

June 2007 - February 2007:

- 3) **PHASE 1:** Replaced one of the existing chillers and upgraded it to a larger capacity. (To date, all chillers have all been upgraded to higher efficiency.)

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- 4) **PHASE 2 & 3:** Install a new supply loop for chilled water for mechanical units in the classrooms and electrical distribution upgrades. *Most work will be done during Spring Break.*

At this point, District funds will be depleted and the District WILL NOT be able to continue work at Corona OR to perform needed renewal work at the other schools

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NOTE: Effect on other schools: depletion of district's building renewal funds will preclude maintenance on other facilities. This problem is magnified since there are not sufficient funds in the renewal fund for proper maintenance since the legislature has not fully or adequately funded this since almost its inception.

IV. Strategies Implemented by District to Help Minimize Problem

- 1) Condenser water lowered to 35°-40°, to offset lack of proper A/C tonnage
- lowered temperature, but caused condensation problems which can cause mold, high humidity and attendant health problems
- 2) The HVAC system is set to start 3-4 hours before school begins during periods of extreme heat. System also runs Saturday and Sunday
- 3) Fan coil units were pressure washed to design specifications

V. Options Available to Obtain needed Funding

Suggested by TUHSD

- 1) Request voters to pass a **Class B Bond in November 2008** (*would not be available until July 2009*)
- 2) Request voters to pass a **Capital Override in November 2008**. NOTE: this money in the past would have been available to all schools; however at this point, these funds would only be used For Corona. (available after November 2008)
- 3) **Break the Corona project into smaller portions** and use whatever yearly building renewal funds are available (this could drag completion to **2014**)
- 4) **Wait for Lawsuit settlement** (Correction of problem could be complete by **2012-2013**)

Other Options

- 5) **Ask Legislatures, along with the Governor** to immediately intervene and find funding needed
- 6) **Write to School Facilities Board** for assistance

VI. Possible Strategies to Minimize Health Risk to Corona Community

- 1) Do an **independent health survey** to estimate what the community is looking at in terms of health effects.
- 2) **Remove carpet in classrooms as soon as possible**. Look to community in terms of financial help or donation of tile.
- 3) Investigate the possibility of a CDC health survey which occurs only if employees request it.
- 4) Implement **Boundary changes** to lower enrollment for school year 2008-2009 so class size is at 20-25 instead of 30-35
- 5) **Close school** until problem is corrected. Have ½ day sessions at Marcos and Mt. Pointe and have Corona kids split between these two schools. For example, Marcos kids would attend in the am and Corona in the pm.
- 6) **Close the worst areas** of the school and bring in trailers temporarily until problem is corrected.

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VII. Health Statistics

Asthma Information:

“In 2005, almost 8 percent of Arizona adults reported they currently have asthma, and the rate among children is even higher.” (Arizona asthma coalition website)

CDC (Center for Disease Control) website has 122/1000 cases of lifetime asthma in 0-17 yr olds. (over 12%)

Student Pop. of Corona del Sol: near 2800 Estimated asthma cases: 280

VIII. CONTACT INFORMATION

Arizona Legislative Information

<http://www.azleg.gov/MemberRoster.asp>

The Honorable Janet Napolitano, Governor of Arizona <http://azgovernor.gov/Contact.asp>

1700 West Washington, Phoenix, Arizona 85007

Telephone **(602) 542-4331**

Senators and House Representatives for community of Tempe Union High School District

District 17:	Senator Meg Burton Cahill	mburtoncahill@azleg.gov	602-926-4124
	House Rep. Ed Ableser	eableser@azleg.gov	602-926-4118
	House Rep. David Shapira	dschapira@azleg.gov	602-926-3028

District 20:	Senator John Huppenthal	jhuppenthal@azleg.gov	602-926-5261
	House Rep. John McComish	jmccomish@azleg.gov	602-926-5898
	House Rep. Rob Robson	brobson@azleg.gov	602-417-3020

<http://www.azleg.gov/MemberRoster.asp> Website to find specific legislatures

U.S. Senators/Representatives

Senator Kyl: 2200 East Camelback, Suite 120, Phx. Az. 85016-3455, Phone: (602) 840-1891

Representative McComish: 7201 East Camelback Road, Suite 335, Scottsdale, Arizona 85251
(480) 946-2411

School Facilities Board

John Arnold, Exec. Director jarnold@azsfb.gov 602-542-6147

Prior to this appointment, he was the Deputy Director of Finance for the School Facilities Board.

Frank Davidson, Chair fdavidson@sfb.state.az.us
Superintendent of Casa Grande Elementary School District

Brooks Keenan, Vice Chair bkeenan@sfb.state.az.us
Senior Structural Engineer for TranSystems Corporation

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Tempe Union High School District

TUHSD Governing Board Information

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Attorneys/Judge

Tim Hogan, from the Center for Public Law Tim Hogan, from the Center for Public Law
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Consultants:

Versar Inc. Headquarters in Virginia <http://www.versar.com/aboutus.htm>

Prime Consulting <http://www.primeconsultinginc.com>

Az. Schools Risk Retention Trust http://www.the-trust.org/guests/Sept99_newsletter.html

Health Effects Group Inc. http://www.healtheffectsgroup.com/heg/new_heg/index.htm

- Dr. Van Ert info@healtheffectsgroup.com
- Shannon Newton info@healtheffectsgroup.com

Indoor Air Quality Assessment Report

<https://www.tuhsd.k12.az.us/insidetuhsd/HealthEffectsGroupReport.pdf>