

**DATE:** November 1, 2017

**TO:** Lisa Lingren, Principal

**SUBJECT:** Downing MS - IAQ - Air Test Results - 11 Areas

On Friday 10/27, Apex-Titan Air tested 11 areas. It is typically assumed that indoor spore levels in an area with filtered or air conditioned air, and activity levels associated with schools average below the outdoor levels. Data from the airborne fungi sampling indicated that the total indoor concentration of mold/fungi in Room 1115, was **6.4%**, Room 1130, was **1.7%**, Room 1120, was **4.1%**, Room 1150, was **2.4%**, Room 2320, was **2.9%**, Gym 3137, was **2.8%**, Gym 3138, was **2.3%**, Girl's Locker Room, was **5.1%**, Choir Room, was **4.5%**, Band Hall, was **8.0%**, Library, was **1.2%** of the outdoor levels. Utilizing this theory, the indoor concentrations are well within the acceptable guidelines for areas with filtered air or air conditioning. If you have any questions, please call me.

Thanks,  
Paul

Paul Siddall  
Maintenance Energy Auditor (IAQ)  
Facility Services  
Lewisville ISD  
340 Lake Haven Rd  
Lewisville, TX 75057



October 31, 2017

Lewisville Independent School District  
340 Lake Haven  
Lewisville, Texas 75057  
Attn: Mr. Paul Siddall

Re: Sound Pressure Level Measurements  
Downing Middle School  
5555 Bridlewood Boulevard  
Flower Mound, Texas  
LISD PO No. 91808850-00  
Apex Project No. 725010727098

Apex Companies, LLC (Apex) collected sound pressure level measurements at the above referenced facility. This letter presents a summary of sampling activities results and findings.

A student alleged experiencing discomfort associated with high frequency sound associated with electrical equipment. Sound level measurements were collected after normal school hours which would not be representative of sound levels when occupied. Obviously, sound levels would be expected to be higher during normal school hours.

The sound level readings were taken from classrooms/areas of the school typically occupied by the previously mentioned student. Lights were on, HVAC was operating, janitors were operating buffers in the gym during the assessment.

The recorded readings are presented in Table 1.

**Table 1 – Sound Pressure Level Measurements**

Location	Sound Pressure Level in Decibels (dB) by Octave Band Center Frequency (Hz)										
	16	31.5	63	125	250	500	1k	2k	4k	8k	16k
Exterior, Northwest	33.6	29.6	37.2	46.9	45.5	47.4	47.3	40.3	43.3	46.3	46.3
Exterior, East	38.2	29.7	38.8	44.9	52.9	58.3	53.9	46.3	43.3	46.3	46.3
Room 1115	34.0	26.2	25.2	28.2	31.2	34.2	37.2	40.3	43.3	46.3	46.3
Room 1130	35.1	25.2	25.2	28.2	31.2	34.2	37.2	40.3	43.3	46.3	46.3
Room 1120	35.4	27.0	25.2	28.2	31.2	34.2	37.2	40.3	43.3	46.3	46.3
Room 1150	34.7	24.7	25.3	28.3	31.2	34.2	37.2	40.3	43.3	46.3	46.3
Room 2320	33.4	26.6	25.2	28.2	31.2	34.2	37.2	40.3	43.3	46.3	46.3
Gym 3637	34.3	28.7	27.1	40.9	31.2	34.2	37.2	40.3	43.3	46.3	46.3
Gym 3138	32.4	23.7	25.4	28.2	31.2	34.2	37.2	40.3	43.3	46.3	46.3
Girls Locker Room	31.8	28.1	28.3	28.2	31.3	34.2	38.7	40.3	43.3	46.3	46.3
Choir Room	33.1	26.8	26.8	28.2	31.2	34.2	37.2	40.3	43.3	46.3	46.3
Band Hall	33.1	26.3	25.8	28.2	31.2	34.2	37.2	40.3	43.3	46.3	46.3
Library	34.4	26.6	28.2	28.9	32.6	41.3	43.7	43.4	43.9	46.3	46.3

**Findings**

The sound pressure levels recorded are within the frequencies of typical hearing range. Ultrasound can be at higher frequencies. The American Conference of Governmental Industrial Hygienists (ACGIH) has established a Threshold Limit Value (TLV) for an eight-hour time-weighted average (TWA) and a forty-hour work week and Ceiling Values which shall not be exceeded at any given time as assessed over a 15-minute TWA, if instantaneous readings are not available. The TLV and Ceiling Values for ultrasound measured in air are presented in Table 2.

**Table 2 – TLVs and Ceiling Values for Ultrasound Measured in Air**

Octave Band Center Frequency (Hz)	10k	12.5k	16k	20k	25k	31.5k	40k	50k	63k	80k	100k
TLV in dB	88	89	92	94	-	-	-	-	-	-	-
Ceiling in dB	105	105	105	105	110	115	115	115	115	115	115

The instantaneous readings for noise recorded after school hours did not exceed the recommended levels in the frequencies that could be measured by the sound level meter.

Based upon the recorded sound levels are various frequencies, no anomalies were recorded in high frequencies from one location to another (i.e., from an area of concern to a non-complaint

area). If occupants continue to have concerns associated with high frequency noise, measuring noise levels during normal occupancy periods maybe considered. As an alternative, relocating the electrical equipment of concern or contacting the equipment manufacturer to identify appropriate methods of reflecting or blocking high frequency noise maybe considerations for addressing a potential source.

If you have any questions, please feel free to contact the undersigned at 469-365-1140.

Sincerely,  
**Apex Companies, LLC**



Darren G. Bowden  
Senior Program Manager



Janet Rullman, CIH, CSP  
Senior Certified Industrial Hygienist