

## 2.3. Sound Basics

- 2.3.1.** Sound is created by mechanical vibrations that displace air molecules to create repetitive changes in air pressure. The ear detects these changes in air pressure and perceives the magnitude as loudness and the frequency as pitch.
- 2.3.2.** Human normal ear can hear sound ranges from 20 Hz to 20,2000 Hz.
- 2.3.3.** Human speech frequencies range from 500 Hz to 4000 Hz.
- 2.3.4.** Pre-recorded messages shall be simple and to the point.
- 2.3.5.** The sound travels through air. The air molecules themselves do not move very far. they simply transfer sound pressure changes into sound waves. Sound waves always move away from the sound source such as speakers.
- 2.3.6.** More power the sound source emits, the wider the sound waves travel. And further the sound waves spread, less intense they become.
- 2.2.7.** As a rule of thumb, sound pressure drops approximately 6 dB for every distance doubled. And sound pressure increases by 3 dB for every doubling of power (Watt).

### AVERAGE AMBIENT SOUND LEVELS FOR INFORMATION

OCCUPANCY	AVERAGE AMBIENT SOUND LEVEL
1. ASSEMBLY	55 dBA
2. BUSINESS	55 dBA
3. EDUCATIONAL	45 dBA
4. RESIDENTIAL	35 dBA
5. MERCANTILE	40 dBA
6. MECHANICAL ROOMS	85 dBA
7. STORAGE (WAREHOUSE)	30 dBA
8. INDUSTRIAL	80 dBA

