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Absorption of ultrasonic waves: Ultra sound causes increase in motion of molecules causing more molecular vibration and molecule collision resulting in heat.

The heat energy will decrease with distance from in an homogeneous medium because a proportion of it is absorbed at each unit distance so that the remaining amount will become smaller and smaller percentage of initial energy.

Absorption depends on nature of tissue that is more in water containing tissue.

Half value depth / Half value thickness :

There is no depth at which all the ultrasonic energy has been absorbed.

So, it is usual to specify half value depth that is the depth or distance at which half the initial energy has been absorbed.

Penetration

Ultrasound waves generally thought to penetrate as deep as 4 to 6 cm in tissues.

The tissues have ^{high} fluid contact such as blood and muscle transmit sound waves much better than less hydrated tissue.

Attenuation of ultrasound in the tissue :-

Loss of energy from ultrasound beam in the tissues is called attenuation and depends on absorption and scattering.

Absorption accounts for 60-80% energy lost from beam.

Scattering is caused by reflection and refraction which occur at interfaces throughout the tissue.