
ANTENNA

Snippets

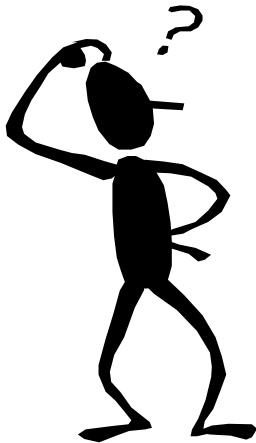
Hi all and here is yet another edition of Antenna delivered to your doorstep (editor cheers). This edition we again have a paper from the Mill's research laboratories (courtesy of the Young Scientists of Australia) and also an article you should read if you're one of those people who cranks up the music!

To those of you heading into the dreaded final exams (or in the midst of them once this gets out), good luck, and remember that the end is near and holidays are now within sniffing distance!

The Thermodynamics of Hell

A quite profound question that has puzzled the researchers at *The Mill* (YSA's research laboratories) for some time has now been solved. *The Mill's* collaborators at the University of Washington are credited with the actual thermodynamic arguments.

Is Hell exothermic or endothermic?



It turns out that this was an question given on a University of Washington chemistry exam. Something is exothermic if it gives off heat and endothermic if it absorbs heat. Students

were challenged to support their answer with proof. Most of the students wrote proofs of their beliefs using Charles' Law (gas cools off when it expands and heats up when it is compressed). One student, however, wrote the following:

First, we need to know how the mass of Hell is changing in time. So, we need to know the rate that souls are moving into Hell and the rate they are leaving. I think that we can safely assume that once a soul gets to Hell, it will not leave. Therefore, no souls are leaving



As for how many souls are entering Hell, let's look at the different religions that exist in the world today. Some of these religions state that if you are not a member of their religion, you will go to Hell.

Since there are more than one of these religions and since people do not belong to more than one religion, we can project that all people and all souls go to Hell.

With birth and death rates as they are, we can expect the number of souls in Hell to increase exponentially. Now, we look at the rate of change of the volume in Hell in relation to combining Charles' and Boyle's Laws. For the temperature and the pressure in Hell to stay

the same, the volume of Hell has to expand as souls are added.

This gives two possibilities:

1. If Hell is expanding at a slower rate than the rate at which souls enter Hell, then the temperature and pressure in Hell will increase until All Hell breaks loose.
2. Of course, if Hell is expanding at a rate faster than the increase of souls in Hell, then the temperature and pressure will drop until Hell freezes over.

So which is it? If we accept the postulate given to me by Ms. Therese Banyan during my Freshman year, "That it will be a cold night in Hell before I sleep with you," and take into account the fact that I still have not succeeded in that area, then (2) cannot be true, and so Hell is exothermic.

This student got the only A.

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Hear Ye', Hear Ye'

Most people know that excessive noise exposure leads to hearing loss. Did you know that hearing loss is not reversible, and that hearing aids do not restore hearing. When you lose your hearing, you not only 'can't hear' as its too soft, but the sound becomes distorted and unclear. Excessive noise exposure causes us to lose our hearing at the high frequencies first (eg 's', 'sh', 't', 'f' sounds of speech) before the lower frequencies (such as vowels). Therefore speech sounds different and 'distorted'. A hearing aid will only make the sounds louder – but they will remain distorted. Further still, a hearing aid cannot amplify the high frequency sounds very well, therefore you will never hear the soft consonants that help us discriminate between words (eg shop vs hop vs hot).

So what's too loud? Here are some examples of common sounds, and how loud they really are. Normal conversation at 1 metre is 50 decibels (dB), with a whisper being 30dB
The library is 40dB
A busy office is around 60dB
An alarm clock is 70dB
Noisy traffic, and car horns register 80dB
A lawn mower or the TV is 90dB
A tractor or factory is around 95dB

A loud walkman, or loud stereo is 100dB
A jackhammer comes in at 110dB.
Rock & Roll bands are 120dB
And a jet plane taking off or a gunshot blast is 140dB.

Anything above 70dB is in the 'risk' range. From 85-100dB is considered high risk, and over 100dB is dangerous.

So what's too much loud noise?
These are considered to be 'safe' noise exposure levels. Above these amounts can damage your hearing – initially temporarily (will 'recover' over a few hours), but gradually it will become permanent. If you get 'ringing' in your ears after you go to a nightclub, listen to your walkman, or are exposed to other loud sounds – this is your body's warning system that the noise is too loud.

85dB – 8 hours per day.
88dB – 4 hours per day
91dB – 2hours per day
94dB – 1 hour a day
97dB – 30 mins
100dB – 15mins
107dB – 3 mins
122dB – 5 seconds.



Ear plugs tend to reduce the sound by 15-30dB. Therefore, for example, you shouldn't be listening to your walkman for more than 15minutes a day, if you have it loud.

Hearing loss DOES happen to the young, from noise exposure. I have met several people in their early twenties who have a significant hearing loss, particularly in the high frequencies, from working in