

The Crew Report Issue 7 – Electronic Guru

Electronics- Health hazard or health help?

At the start of a new year, when all our thoughts and resolutions turn to the body beautiful, let's take a look at the ways in which working with the latest electronic technology can possibly affect your health and wellbeing.

Mobile phones?

According to a recent report in the British Medical Journal, by Michael Maier, Senior Lecturer at Imperial College School of Medicine, the only way in which your mobile phone will cause a serious health hazard is if you use it whilst driving! Studies have shown that the decrease in reaction time while using a mobile phone increases with age and is equivalent to that caused by a blood alcohol level of 0.05%. Interestingly, the risk is the same when the phone is used "hands-free", implying that it is due to the distraction caused by the conversation. A worrying thought, but perhaps the best solution is to get out from behind the wheel and stay safely afloat!

Mobile phones transmit and receive radio frequency radiation (at frequencies in the microwave range of 900-1800 MHz) through an antenna used close to the user's head. The horror stories that proliferate are that the microwaves might fry your brains and induce or promote cancer. In the UK, guidelines are set by the National Radiological Protection Board and are based on the assumption that the only risk from microwave radiation is heating of tissue. The heating produced from a typical mobile phone today is insignificant with a maximum power output of 1W. The heating effects are absolutely minimal and are unlikely to make anyone delirious

So, we've all read about the potential health hazards, but some 500 million people worldwide are now using mobile phones, so we have obviously decided that the benefits outweigh any risks to our health. In fact, there is the argument that the use of mobile phones to summon rapid medical assistance in case of accidents has saved many lives. On some yachts, we are now installing SMS text systems which automatically send alarm warnings to mobile phones. There is no doubt that mobile phone technology has a multitude of beneficial uses.

MP3 Ear!

Can you believe it? This is a recognized syndrome, so beware! Not surprisingly, it is all about causing premature deafness by listening to an MP3 player. Lawsuits have surfaced and many have questioned whether it is the manufacturers who should be responsible for educating and protecting the end-user. Personally, I am sure this is all hype but you never know, so what should the average music enthusiast do to prevent the possibility of "MP3 Ear"?

All portable mp3 players have the potential to cause music-induced hearing loss. I have used the word potential as there has only been one formal investigation to date. This study, by the ASHA, has resulted in the publication of the following recommendations:

You can listen without causing permanent hearing loss as follows:

1. if you listen at 1/4 of the total volume, you are potentially safe for approximately 1 hour
2. if you listen at 1/2 of the total volume, you are potentially safe for <4 minutes
3. at 3/4 of the total volume, you are potentially safe for <1 minute
4. no one should use any device at full-on volume as the risk for permanent hearing damage is significant in very little time.

Although this sounds quite daft, it is a warning worth heeding. I really enjoy listening to music but, since suffering hearing loss in one ear (not caused by overuse of my MP3 player, I should stress) I find it extraordinarily irritating and even debilitating, especially when being asked to appreciate a high quality audio system or to hear conversation in a noisy environment.

The health benefits gained from MP3 players are by improving your relaxation. An MP3 player is a vehicle for transporting and playing music. Listening to music (some) is clearly proven to induce relaxation. Various treatments from cancer to massage include playing music using an MP3 player as part of the course.

It would seem pretty obvious that control of volume is the key to gaining great pleasure without the hazards.

Radiation hazard from antennas

Today's yachts have a multitude of antennas and these must be located carefully as some of these do transmit harmful RF (radio frequency) radiation. The most obvious location is high up to increase range, see the sky and be out of the way, but you must always make sure that all equipment is switched off before working aloft. .

You could have any number of radomes aboard. Some of these are passive satellite TV dishes that are safe as they only receive TV signals. However, others are Inmarsat satellite communication dishes and VSAT dishes. Sea Tel are the leading manufacturer of both the satellite TV and VSAT domes. With respect to the VSAT, Peter Blaney, Vice President of Engineering at Sea Tel has said "we are confident that a person standing anywhere outside the limits of the radome on a VSAT 4003 or 4006 is safe from RF exposure. However this is not true inside the radome. Between the feed and the dish there are hazardous RF levels

and hence the need for the warning labels on the front of the Antenna Control Unit.”

Thrane & Thrane state that the minimum safe distance for a person from an Inmarsat Fleet 77 radome when transmitting is 4 metres and similarly for all other Inmarsat Fleets, satcoms B, M & A of all makes and varieties.

All radars transmit hazardous microwaves and obviously the more powerful the radar the greater the hazard. When a radar is transmitting, the outgoing beam is narrow and widens and weakens over distance, firing directly out from the yacht and is not harmful on deck. However, also be aware of other yachts around you, especially in port or in an anchorage, with their radars running.

Only antennas that transmit are of concern, and then only when in transmit mode and within close proximity. The installation of these should always be carried out by professionals. Thus any health hazard is kept to a minimum and, by adhering to safe working practices, will be reduced to zero.

However, rather like mobile phones I have never heard of anyone's health being damaged by antennas on a yacht, whether it be crew or service technicians. However, I have heard many examples of how they have saved lives. The most obvious example is the MedLink on-line medical service that can only be used in mid ocean by using the radome equipment to communicate ashore to save lives.

These are just a few examples of electronic components that have had health related concerns aired in the media. Everything in life can be hazardous if used in the incorrect way. Even though a satellite TV radome is passive it could fall off the mast and hurt you quite a lot. All that is required is common sense and in a few cases training to avoid health risks from the use of any electronic systems or equipment.