FAO Ian Pilling Acting Chief Constable GMP. 1.3.21.

Most confidential report on the TETRA (AIRWAVE) COMMUNICATION SYSTEM

Strictly for THE PUBLIC AND COMMERCIAL SERVICES UNION (PCS)

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TO ALL FRONTLINE EMERGENCY SERVICE PERSONNEL

In 2001 the police federation commissioned a report on the impact of tetra (airwave).

The findings of the report were delivered to members of the federation the same year.

This report and the attached 2009 report highlight the dangers of exposure to electromagnetic radiation which can cause brain damage, cancers and genetic deformities.

Female personnel are particularly vulnerable.

High court judgements now conclusively prove tetras links to cancer.

Why is this system still in use?

Risk is in every factor of life. Certain professional people, such as in the emergency services, accept a much higher level of risk than most other every day employees. However, this acceptance of risk is consensual.

Within this report I am asking two questions of the reader:

i) Is the level of risk when using the TETRA (AIRWAVE) COMMUNICATIONS SYSTEM acceptable for all periods of duty?
ii) Should the wearer of this system be allowed to make an informed decision on the level of risk?

TETRA (AIRWAVE) was rolled out without any proper experimental procedure. The authorities decided that the user would be a part of this experimental process into such risk factors as brain tumour, brain damage, cancers and / or complications arising from suppression of the immune system.

The National Radiological Protection Board (now the Health Protection Agency) published in 2001 a report listing the possible health effects from the TETRA (AIRWAVE) system. (Appx. 1)

In this report the NRPB say ".....there are limits to the reassurance that they provide.....they do not exclude a risk of cancer many years after first exposure.....nor do they rule out a hazard from the modulation frequency of 16 Hz." (Appx. 2)

The report continues ".....human volunteer studies should be carried out to measure changes in cognitive performance.....from TETRA handsets.....this will be of value for any future epidemiological study." (Appx. 3)

The NRPB documents, Vol. 15, No. 5 'Mobile Phones and Health 2004' Page 9, the report says "The Board welcomes the research programme that the Home Office has established. This includes an epidemiological study on police officers who are occupationally exposed to the TETRA signals."

Further down the same page the same report says "Until much more information becomes available the Board considers that it would be premature the possibility of health effects on users of TETRA based equipment and believes that a precautionary approach should be adopted." (Appx. 4)

The problems I have with this report are two-fold:

i) Have the officers agreed to be a part of an epidemiological study that could involve brain damage, cancer and /or genetic damage?
ii) A precautionary approach really means using a system as little and as careful as possible!

Is it feasible for an officer on a long shift to use a communication system as little as possible, when the system itself has to be operational? What about emergency situations where an officer may be using this system continuously for many hours?

I was present at the TETRA (AIRWAVE) Conference (23.10.02). The opening words of the conference by the Police Federation Chairperson, Jan Berry, were: "Nothing is going to stop TETRA."

This was followed by Dr Levey's statement (who was challenged by union representatives over their officers reporting illnesses from TETRA): "I don't believe they are sick, they are not sick enough to stop this trial." (Appx. 5)

Dr Levey continued: "They use it or resign."

To me, the interesting word here is 'trial'.

NUREMBURG CODE

At the end of the Second World War, the major countries involved in rebuilding the planet decided on a code to prevent all or any human experimentation without the full consent, understanding and knowledge of the risk factors involved to the person. This became known as The Nuremburg Treaty of which Great Britain was a signatory. Section 1 of this CODE specifically requires the voluntary consent of all human subjects. This means that the person involved should have the legal capacity to give consent and exercise a free power of choice without any element of force or coercion. The person must also be aware of all hazards which may possibly arise from this experiment. (Appx. 6)

It is my experience from discussions with police officers, that they are unaware they are a part of an epidemiological study which could result in brain damage, tumours and other illnesses. I believe this is in direct contravention of The Nuremburg Code.

SAFETY LEVELS

The TETRA (AIRWAVE) system uses microwaves not radio waves. Microwaves are used because they are more penetrative than radio waves. Microwave frequencies range from 300 MHz to 300 GHz as defined by the NRPB report and the International Commission on Non-Ionising Radiation (ICNIRP). (Apps. 7.1 and 7.2)

For the convenience of the reader, I have enclosed a conversion chart of safety levels from around the world. (Appx. 8)

Interestingly the European Parliament has recommended a stricter safety limit for all microwave phone users. This is based on average use which may be around 20 minutes a

day. I have heard of police officers using their microwave systems for up to 14 hours a day. (Appx. 9)

PARLIAMENTARY DEBATES

On Tuesday 1st March 2005 MPs discussed the whole TETRA (AIRWAVE) issue in parliament (1).

MPs raised the following points:

1. There was no consultation with constituents regarding the infrastructure required for this system.
2. The police are unhappy with some of the problems the system is having.
3. Information is being withheld from MPs to make an informed decision.
4. £30,000 has been requested to study the effects of this system on children.
5. Why was research not been done on this system before three billion pounds was invested?
6. Police constabularies are raising cases of illnesses.
7. 58.5% of residents around transmitters are complaining of pain, sleep and skin problems around TETRA transmitters since their erection.
8. Appeals to mast companies go unheeded.
9. The TETRA industry has shown complete disregard for the concerns for local people.
10. There is an absence of a serious attempt by anyone in authority to address health concerns.
11. The industry has been accused of not telling the truth ie when people complained of the ill effects from the transmitter they were told it was turned off whereas in fact it was on.
12. Any attempt by a district council to prevent the erection of a transmitter usually fails.

In a further parliamentary debate, 28th January 2004, Column 116WH, when Mr Andrew Turner, MP for The Isle of Wight, questioned the erection of a transmitter, he was told that it was an emergency matter, therefore as this industry can put up transmitters under emergency measures, Mr Turner asked that this power be withdrawn from the developers.

This problem is exacerbated by the number of transmitters likely to be needed should this system become fully operational. I enclose a list of 54 potential users for this system. (Apps. 10.1 and 10.2)

During a discussion in the House of Commons Public Accounts Committee (2) the problem of reported officers' illnesses from the TETRA (AIRWAVE) system (migraine, depression, difficulty in concentrating, headaches, heart and blood disorders, alteration to brain electrochemistry and increased risk of leukaemia) in Section 244, Mr Askew replied to this issue that there is no proof there are any of these effects. (Appx. 11)

I cannot verify the authenticity of this document but it was reportedly published in an European news article on 17th April 2003. It implies that the American Secret Service Agency has the ability to intercept all TETRA (AIRWAVE) communications. I wonder whether this is the reason behind the Government's intransigence, insisting that this system be rolled out without hindrance. (Appx. 12)

MEDICAL PROBLEMS

Dr Andrew Goldworthy, Lecturer in Biology at Imperial College, London, has highlighted the particular pulse frequency of TETRA handsets being hazardous by causing neurophysiological problems to some people. This stems from the loss of calcium from cell membranes. Put simply, if calcium is lost from cell membranes, the cells can lose their ability to function and can make the cell more permeable to allergens, toxins and carcinogens. (Appx. 13)

On 26.12.02 the Radiation Health Foundation Inc. produced a report which specifically targets the TETRA frequency of 17.6 Hz. It says it could cause harm to the health of the police and other citizens by causing irreversible brain damage by disturbing the calcium in the brain. It continues, this could also affect memory and neural patterns which could lead to behavioural and character changes. (Apps. 14.1 and 14.2). For the interest of the reader, I have enclosed a more specific explanation from Dr Goldworthy explaining how the pulses from the TETRA system cause the breakdown of membranes. (Appx. 15). Should the reader be interested, I have six further research documents explaining that low level of microwave irradiation may cause nerve cell damage from calcium leakage, interference to the body's natural chemical balance, cell stress, possible DNA damage, possible tumours from cancer promoters / initiators and imbalance of essential chemical structures from protein synthesis. I will not reference these and other documents as I go through this report, unless I am specifically requested, because it will make this report infinitely lengthy.

CANCERS

I must stress that not everybody who carries a microwave transmitter or resides under a powerful TETRA (AIRWAVE) transmitter is going to develop cancer. Rather like not everybody who smokes is going to develop lung cancer. Dr Siegal Sadetski of Tel Aviv University has published research which links low level microwave radiation to tumours of the mouth. (Appx. 16). Evidence that electromagnetic radiation is genotoxic was published

in full detail for the parliaments of five countries by Professor Neil Cherry of Lincoln University, New Zealand, in the year 2000. Genotoxicity basically means that the low level microwave radiation can cause cellular changes which can lead to genetic damage which in turn can lead to cancer. Professor Cherry published a summary of observed effects from exposure to low level microwaves. Interestingly all of these effects are below international safety guidelines. I have included this chart because it is interesting to see where TETRA (AIRWAVE) may fall on the scale. Later in this report I will print some radiation levels both inside and outside of vehicles and the reader may wish to compare these levels from TETRA transmitters against the chart of observed effects.

NB As a rough guide looking at the exposed level axis a TETRA (AIRWAVE) handset may reach two to three hundred units on this scale and a vehicle may reach thirteen hundred units from the information I have been given. This is not to say that they operate at these levels continuously. Although I have been informed, that in some cases police officers may spend up to 24 hours on special duties in the back of a metal van and/or a dozen officers may all be in the back of a van transmitting for hours before a demonstration. (Apps. 17.1 and 17.2)

On page 90 of the document on the NRPB (Appx. 1) it says a police handheld transmitter may transmit 3W and if it were to transmit continuously the officer would reach the occupational exposure guidelines in just six minutes. (Appx. 18)

The Indian Journal of Human Genetics concluded in 2005 that there was a correlation between extended mobile phone use and genetic damage. I raise this point because officers tend to carry these transmitters for very long periods at a time and I believe the special pulsing/modulation feature of TETRA (AIRWAVE) will exacerbate the situation. (Appx. 19). There are some forty major studies showing links from low level microwaves to cancer promoting effects. The main long term epidemiological studies are Naylor, Wolf & Wolf, ECOLOG, Bio-initiative and The REFLEX Study. Unless the reader specifically wants a breakdown of these lengthy research documents, I will not include them in this report. However I would be happy to forward further details on request.

In July 2003 I was invited to present a talk to consultant oncologists on exactly how microwaves trigger cancer initiators and promoters. I enclose a copy of this talk for the reader to submit to his / her scientist. (Apps. 20.1, 20.2 and 20.3)

Within the last seven months, five police officers have contacted me with cancers of the throat. Possibly the most notable of throat cancer cases were the two motorcycle officers in the same force who sadly both died. The odds of this happening are over a million to one. One of these officer's brothers is a doctor specialising in health and safety. This doctor monitored his brother's health during the growth of this cancer and is in no doubt that the TETRA (AIRWAVE) system is to blame. (Appx. 21).

Professor Challis (possibly this Government's leading scientist with regards to microwave radiation) published in an article in Scientific American the risk factor of developing a tumour from cell phone radiation. When you take the Professor's figures and scale them up for the length of time officers carry transmitters, these same figures suggest a possible

potential for 1090 slow-growing tumours today. With excessive use over many years this figure may rise as high as 7630 cancers. (Appx. 22).

Brain

Possibly the most controversial arguments concerning the TETRA (AIRWAVE) system is its pulse/modulation frequency of 17.6Hz. This particular frequency mimics one of the brain's natural wavebands. When one wave encounters another wave of similar frequency a phenomenon known as entrainment can occur. The simplest way to describe entrainment is to imagine yourself bouncing on a trampoline at a set rhythm, then a 75 stone man jumps on and bounces at his rhythm, you will be forced to bounce at his rhythm. This can happen in the brain between the TETRA pulse/modulation frequency and our natural beta brainwave. The beta wave of the brain is responsible for decision processes in emergency situations. There is very little difference between a pulse and a modulation. The only difference is that there is a gap between pulses and an infinitesimal thin thread of energy between modulations.

In 1976, the US Defence Intelligence Agency published a series of papers warning personnel carrying small microwave transmitters transmitting below today's guidelines. The Agency warned that excessive use could induce headaches, fatigue, menstrual disorders, irritability, agitation, sleeplessness, depression, anxiety, lack of concentration and brain and heart function problems. (Appx. 23). A report commission by the Department of Health under the chairmanship of Sir William Stewart (at the time our Government Chief Scientist) found that frequencies of around 16Hz released calcium ions from brain tissue. The release of calcium ions from the brain could be the trigger for all of the above mentioned illnesses. In this same report Sir William criticised the Government's scientist for withholding this information from him when TETRA (AIRWAVE) was being commissioned. (Appx. 24). In fact at this time, there were already seven peer-reviewed and published studies showing this phenomenon which were overlooked. (Appx. 25)

The Police Federation published a letter in 2008 which suggests that once the Government realised this system was potentially dangerous it was too late to do anything about it. (Apps. 26.1 and 26.2). This phenomenon was highlighted on the Channel Four News in 2001. Where Channel Four suggested that TETRA radios may have a direct effect on the brain's biochemistry. (Appx. 27)

During my address to the Welsh Parliament, 3 October 2006, I discussed research by the Association of Fire Fighters who published an extensive report into microwave communication systems. Their conclusion was "Many fire fighters living with cell towers are paying a substantial price in terms of physical and mental health" (3).

I am going to list just some of the thirty documents I have concerning electric pulses entering the brain causing changes in brain chemistry, brain activity and neurological problems.

Should the reader require further research in this area I can be contacted and produce a separate paper on this issue.

1. Electrify Your Mind, New Scientist, 15th April 2006, Dr Bigal Trivedi
2. Electro Clinical Syndromes, Professor Luders
3. Human Body Resonances and Physiological Effects, Anne C Silk, FRS

I have listed some of these pulse frequencies against the symptoms they are known to induce in some people. Also in the appendices there is a very simple basic mathematical model showing how the power from a TETRA handset can entrain the brain. This will obviously vary from person to person. (Apps. 28.1, 28.2, 28.3, 28.4 and 28.5)

Putting it simply some of the published research from this phenomena shows:

1. Changes in the blood-brain barrier which can result in toxins entering the brain.
2. The Fenton Reaction which can result in a depletion of iron in the brain and the production of a cancer promoting cell(s).
3. Neuro-behavioural effects.
4. Nerve cell damage.
5. EEG disruption.

I have 13 pages comprising of lists of research papers showing the above effects. Clearly I cannot reference all of these articles in this report. I would be happy to produce another report just on this area should the reader request it.

Women

It appears that the complex systems within a lady are more susceptible to microwave disruption than men. I co-wrote a research paper with Science Editor, Andrea Klein, where we referenced how low level microwaves can have a geno-toxic effect on the ovarian eggs. This could cause genetic damage to the mitochondrial DNA which is irreparable. What this means is that any female generations from the mother will carry this genetic defect. (Appx. 29). This is of particular relevance to lady police officers carrying handsets transmitting into their bodies on long shifts. These phenomena have been replicated and published showing that ovarian follicles can be damaged by low level microwaves from countless unknown mechanisms. (4).

The Independent on Sunday 18th May 2008, page 14, (Geoffrey Lean) warned of a study of 13,000 children exposed to low level microwaves whilst the mother was pregnant. The research by UCLA's Professor Leeka Kheifetis found behavioural problems consistent with the length of exposure to the mother. This concerns me greatly because a police officer lady

may be carrying a handset on her body whilst not realising she was pregnant. Again, I worry that the TETRA (AIRWAVE) pulse frequency may exacerbate this situation.

I have other research papers showing embryonic blood disorder and risks of breast cancer which really duplicates what I have already said. In an effort to try and keep this report of a reasonable length, I will just discuss that I have three research papers showing that women may be 4.15 times more likely to develop adverse symptoms from low level microwaves than their male counterparts. Interestingly, most of the officers who contact me with tumours are ladies.

I am particularly concerned at the level of radiation some lady officers are irradiated with. In my conversations with them, they seem absolutely uninformed as to any of the risk factors they could be facing concerning their transmitters and the proximity of these transmitters to their breast tissue and ovaries.

ELECTROSENSITIVITY

Electrosensitivity is recognised by the World Health Organisation (WHO). Countries which have carried out research in this area believe that in excess of 3% of their populations may be hypersensitive to low level microwaves. The Noble Prize winning Irish Doctors' Association believe that this number may be as high as 15%.

NB In real terms this implies that 3% (minimum) of all police officers carrying the TETRA (AIRWAVE) system could be affected. (Apps. 30.1, 30.2 and 30.3). The International Commission for Electromagnetic Safety also recognise scientific studies and epidemiological studies listing electrosensitivity as one of their findings. (Appx. 31)

In 2006 the WHO database showed that 80% of its published research referred to microwave sickness which included electrosensitivity, cancer and neurobehavioural complaints. (Appx. 32)

One epidemiological study previously listed (Wolf & Wolf, April 2004) found a ten fold increase among women when adults were exposed to microwave irradiation. (Appx. 33).

In an open letter to the Prime Minister of Germany, Dr Stoiber warned that low level microwaves were causing a range of symptoms which included irritability, hormone disturbances and depressive tendencies. (Appx. 34)

In 2002 the Freiburger Appeal was launched and has now been signed by over 3000 hospital consultants, doctors and scientists. It warns that certain people can suffer behavioural disorders, brain degenerative diseases, cancers and a range of other symptoms from over exposure to low level microwaves. (Appx. 35)

The Health Protection Agency (formerly the NRPB) published a list of reported symptoms from electrosensitive suffers. These include problems with the eye, skin, muscles, digestion, heart, behaviour, psychological (extreme rage) and associated conditions. (Apps. 36.1 and 36.2)

As long ago as 2003 one of the world's leading medical scientist cast doubt on the TETRA system saying it may constitute a health hazard to people living near to installation sites. I mention this because a lot of police families live in close proximity to a police HQ hence major size transmitter. (App. 37)

I would like to add at this point in time that an experiment carried out in this country to determine electrosensitivity failed to find it, although this same experiment was repeated by four other universities in the world who did find electrosensivity and after publishing their results criticised the methodology of our university. However it is the result of our university which our Government prefers to recognise. Therefore technically electrosensivity does not exist in this country although it is recognised by the WHO and treated in other countries.

POLICE VEHICLES

I received a phone call very recently from a senior officer of the London Metropolitan Police. He said to me "I can have up to a dozen officers in the back of a metal van for hours on end all transmitting next to each other, prior to a demonstration. Also the vehicle itself is transmitting. Knowing that levels of radiation are accumulative, is this safe?"

I was absolutely horrified at what I was told. The reason is the Automotive Conformance Specification 6, Issue 9 (Automotive and Equipment Section) for Police Vehicles has recorded microwave field strengths in excess of 50V/m inside police vehicles. The reader may wish to return to my safety level chart and observe that this level of radiation is higher than any other permitted level in the world. Also it should be noted (rather like sunbathing) that all levels of radiation are accumulative. (Appx. 38)

There are several documents relating to the influence of low level microwaves on brain function and its influence on driving. Sylvia Wright who manages a website collecting this data (www.mastsanity.org) has published a few research articles concerning microwaves in vehicles. The documents show that microwave irradiation within a vehicle can be more hazardous than alcohol. (Apps. 39.1, 39.2 and 39.3)

These phenomena have also been identified and published by Science Daily. (Appx. 40)

In my original TETRA (AIRWAVE) report for the Police Federation, one of my recommendations was that all police vehicles be screened inside to protect the officer from microwave radiation. Information I have reports that this has not been done neither are levels

being monitored. I wonder whether this could be partly responsible for the reported nine vehicle crashes caused by police officers every day. (Appx. 41). Exacerbating this is the fact that police vehicles are made of metal and react like microwave ovens reflecting the microwaves continuously within the vehicle.

ARGUABLE POINTS

The reader needs to determine, if at all, the level of bias from governmental / industrial sources of information. An investigative study into research papers led by the Department of Social and Preventative Medicine, Switzerland, which included the University of Bristol, concluded that interpretation of results from health studies needed to take sponsorship into account. (Appx. 42)

Michael Meacher, Minister for the Environment ('97-'03) was a little more specific in an article published in The Times where he suggested "Our universities are so strapped for cash that they see a research contract as a potential source of funds and will try not to jeopardise the contract". Mr Meacher is suggesting in this article that favourable scientific results will result in a lucrative contract. (Appx. 43).

NaturalNews.com printed an article (20.5.08) asking Congress (USA) for politics to be removed from scientific research. They argue that politicians are accused of censoring, suppressing and falsifying key environmental and health research. (Appx. 44)

Our own Essex University study was attacked by some of the world's leading universities concerning its methodology. The Essex study was repeated by Karolinska Institute, Uppsala University in Sweden and Wayne State University in Michigan, USA this was published in The Independent on Sunday (20th January 2008) by Geoffrey Lean (5).

I am also worried about our own Government research. I am a university qualified experimental physicist, I teach advanced practical physics. If you said to me "Could you test the TETRA (AIRWAVE) system?" I would prepare a study along similar lines to that of a drug company testing a new drug. I may have a provisional result within five years but the full study would take me at least ten years before it were published. Our Government scientist managed to test TETRA (AIRWAVE) for brain / heart damage in less than one hour. (Apps. 45.1 and 45.2)

CONCLUSION

I have lectured and conversed with scientists on every continent and have never encountered the reaction and problems associated with TETRA (AIRWAVE).

The reader must decide to believe or disbelieve me when I say that since publication of my reports in 'Jane's', I have received communications from 11 countries complaining of this system. One person said "Since the introduction of this system the violence within our police force is greater than the violence we are investigating."

TERA (AIRWAVE) was rolled out without the proper long term experimental evidence to determine its safety level for excessive irradiation exposure concerning:

1. The effect of the pulse / modulation frequency on the brain.
2. The effect of this same system removing calcium from cell membranes, thence, triggering cell damage.
3. The consideration of the plethora of research I have published in this report.

I believe that the statement from the unnamed spokesperson for TETRA (AIRWAVE) printed in 'Jane's', in response to their articles: "There is no evidence that airwave causes cancer or is responsible for behavioural change.....statements.....are wholly speculative and have no basis in fact." seems inconsistent with both my and the Government scientists' findings printed in this report. (Apps. 46.1, 46.2 and 46.3)

I am further confused by this spokesperson's statement insofar as their own airwave health monitoring study found:

1. Increased incidences of testicular cancer.
2. Higher mortality rates.
3. Higher incidences of cancers.
4. Higher incidences of leukaemia.
5. Higher incidence of brain tumours.

These were research articles carried out on police officers and other service personnel. (Apps. 47.1 and 47.2)

An ongoing TETRA (AIRWAVE) medical study for reported ill effects is due to finish in 2018. Rumours already abound re:

1. This medical study is to be scrapped due to lack of funding.
2. This medical study is due to be scaled down as not enough officers are volunteering for the medicals.

Supposing this medical study is cancelled, what then? Will the whole system be changed for another, because it could not be shown to be safe? Or will the powers-that-be just leave it running?

Clearly nothing is risk free, but I have never heard like the reactions I have heard concerning TETRA (AIRWAVE). Other forces in many other countries seem not to have this problem.

In October 2004 The Ecologist Magazine published an article "A Popular Revolt" concerning the reported problems of the TETRA (AIRWAVE) system. Within this article the magazine

published a website where my original report for the Police Federation can be found (6). (Appx. 48)

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