

# The Korean Report

## EFFECTS UPON OF OCCUPATIONAL EXPOSURE TO MICROWAVE RADIATION (RADAR)

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The effects of occupational experience with microwave radiation (*radar*) on the health of U.S enlisted Naval personnel were studied in cohorts of approximately 20,000 men with maximum opportunity for exposure (*electronic equipment repair*) and 20,000 with minimum potential for exposure (*equipment operation*) who served during the Korean War period. Potential exposure was assessed in terms of occupational duties, length of time in occupation and power of equipment at the time of exposure. Actual exposure to members of each cohort could not be established. Mortality by cause of death, hospitalization during military service, later hospitalization in **Veterans Administration** (VA) facilities, and VA disability compensation were the health indexes studied, largely through the use of automated record systems. No adverse effects were detected in these indexes that could be attributed to potential microwave radiation exposures during the period 1950-1954. Functional and behavioral changes and ill-defined conditions, such as have been reported as microwave effects, could not be investigated in this study but subgroups of the living study population can be identified for expanded follow-up.

### *Disability ratings, microwave exposure, morbidity, mortality.*

Since the development of radar during World War II, microwave-generating devices have been used in an increasing variety of military, industrial, scientific and general population applications. Microwave sources are used almost universally in systems of telecommunications, surveillance and navigation, for weapons control, for heating devices such as microwave diathermy equipment, microwave ovens for commercial and household cooking and drying techniques in industry and for a variety of consumer products.

As uses have multiplied and power output has become greater, exposures to microwave energy both at work and in daily life have increased. The health implications or hazards of exposure of man to this type of **non-ionizing** radiation remain a matter of concern and uncertainty. The nature of biologic effects and the levels of microwave radiation which can induce them in man are unclear, **particularly with respect to long-term effects**.

**Abbreviations:** AE, Aviation Electrician's Mate; AT, Aviation Electronics Technician; BUPERS, Navy Bureau of Personnel; ET, Electronics Technician; IT, Fire Control Technician; IDDS, Inpatient Discharge Data System; MR, Mortality Ratio; PTF, Patient Treatment File; RD, Radarman; RM, Radioman; VA, Veterans Administration.

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The capacity of microwaves to produce a measurable temperature rise in tissues, and the susceptibility of certain tissues (**skin, testes, lens of the eye**) to thermal injury, notably the cataractogenic effect (1), have been the basis for protective guides or standards in the U.S and some western European countries, where the recommended maximum permissible power density for occupational exposure is generally **10 mW/cm<sup>2</sup>**.

In the USSR and other eastern European countries, on the other hand, power densities too low to produce a measurable rise in living tissues (less than approximately **10 mW/cm<sup>2</sup>**) = **(1.942 Volts/m)** have been reported to cause biologic effects, presumably on a nonthermal or microthermal basis (2). These effects are physiologic reactions, symptom complexes or functional disorders which may be reversible or may be precursors of pathologic processes or signs of organic disease. They involve all systems of the body but particularly the central nervous, cardiovascular, and endocrine systems. The official occupational standard in the USSR is set at **10 µW/cm<sup>2</sup>** (**0.01 mW/cm<sup>2</sup>** for full time work, a standard that is in most situations about 1000 times lower than the usual recommended level in the U.S.

Despite extensive use of microwave energy in both military and civilian applications, considerable microwave research work, and various protective standards and guidelines, there is little definitive information about the health effects of human exposure to microwaves in occupational and other situations (3, 5).

The purpose of this study was to assess the effects of microwave radiation (radar) upon the health of U.S Naval personnel by taking advantage of occupational differences in level of exposure, the availability of information on hospitalization during service, and the relative ease of tracing veterans for mortality. The only published report of shipboard experience we are aware of, from the Soviet Union (6) provides limited health data from the dispensary records of some 4000 crew members of ocean-going vessels. Chronic diseases were most prevalent among radio operators and mechanical specialists, and ship radio operators had frequent eye strain and early onset (age 30-35 years) of cardiovascular disease after 5-10 years of service.

Although epidemiologic studies have been made of eye disorders and military occupational exposure in the U.S (7, 8) they have been generally small, lacking in power to detect small effects, and oriented toward particular end results, especially cataracts. However, with many tens of thousands of technicians having been trained by the **U.S Armed Forces** for radar maintenance and operation, a basis was established for occupational comparisons aimed at a wide array of potential effects.

## **METHODS**

Since World War II, the U.S Navy has maintained technical schools where enlisted men are trained in the use and maintenance of radar equipment for navigation and gunfire control. The schools have graduated large numbers of technicians similarly selected for general intelligence, aptitude as measured by a battery of standardized tests, and motivation for technical work. The men selected for this study were graduates of Class A schools during the period 1950 through 1954 who served on ships. (Class A schools are in general designed to

provide the basic technical knowledges and skills required to prepare. personnel for the lower petty officer rates (pay grades). Naval Bureau of Personnel (BUPERS)

## EFFECTS OF MICROWAVE RADIATION ON HEALTH.

Since 1951, the Navy has been making measurements on ships that offered a basis for selecting the most highly exposed occupations. On the basis of a consensus decision by Navy personnel involved in training and operations, occupational groups were classified as maximally exposed to microwave radiation (those repairing radar equipment) and minimally exposed (those operating radar equipment). Because there were fewer men than estimated in one of the maximally exposed groups (fire control technicians who served on ships), aviation technicians were added to the study group. The vast majority of aviation technicians also graduated from Class A schools during the same period, but they served at some time in airborne patrol squadrons.

Men selected for the study were drawn from six Naval Enlisted Classifications of occupations. The high exposure cohort is made up of Electronics Technicians (ET), Fire Control Technicians (FT) and Aviation Electronics Technicians (AT). The low exposure cohort includes men trained in equipment operation: Radiomen (RM), Radarmen (RD) and Aviation Electrician's Mates (AE). Numbers of men in each rating selected for the study are shown in table 1.

Follow-up medical information was derived from Navy and Veterans Administration (VA) records. The Navy's records of hospital admissions were searched for the years 1952 - 1954 and 1956 - 1959 data for 1955 are, unfortunately, not available. Records of admissions to VA hospitals were available for computer search beginning with admissions in 1963. The cohorts were matched against these files for the years 1963 to 1976 and also against the VA records file of awards for disability compensation active in 1976.

Mortality was ascertained through 1974. The death of almost every war veteran, regardless of any possible prior association with the VA and it is estimated that for 98 per cent of war veterans who die an application is made to the VA for burial benefits. The certified causes of death were obtained from copies of the death certificates, which were usually included in the VA files, but which when necessary were obtained from local vital statistics offices.

Cohorts were followed throughout their service at the level of Navy hospitalization and subsequently in VA hospitals. VA awards for service-connected disability were also obtained.

### TABLE 1

*Numbers of men selected for study by exposure group and occupational classification: U.S enlisted Naval personnel exposed to microwave radiation during the Korean War period.*

#### Exposure group and occupational classification №.

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#### Low exposure

Radiation (RM)	9.253
Radarmen (RD)	10.116
Aviation Electrician's Mate (AE)	1.412

**Total** **20.781**

#### High exposure

Electronics Technician (ET)	13.078
Fire Control Technician (FT)	3.298
Aviation Electronics Technician (AT)	3.733

## Assessment of exposure.

It was not possible to assign exposure doses to any individuals in this study. Exposure to microwave radiation, unlike ionizing radiation, cannot be measured by a personal device such as a film badge. The only measurements possible are environmental or arise out of efforts to reconstruct the circumstances of an accidental overexposure. There have been enough accidental exposures at estimated levels exceeding **100 mW/cm<sup>2</sup>** (9) to indicate that there are occupations in which some men at some times on certain classes of ships have been exposed well in excess of the **10 mW/cm<sup>2</sup>** limit (10). Shipboard monitoring programs in the Navy since 1957 seem adequate to show that, in contrast, men in other occupations rarely, if ever, are exposed to doses in excess of **10 mW/cm<sup>2</sup>** (11). Radiomen and radar operators, whose duties keep them far from radar pulse generators and antennae, are exposed to levels well below **1 mW/cm<sup>2</sup>**, whereas fire control technicians and electronics technicians are exposed to higher levels in the course of their duties. The exposure pattern that is characteristic of occupational exposure is modified during off-duty hours, especially by activities on deck. Off-duty exposure on deck, estimated by reference to measurements made as part of the Navy monitoring program, is extremely unlikely to exceed **1 mW/cm<sup>2</sup>** (11).

There is no way of integrating occupational exposure over time for men in high-exposure occupations. Their mean exposure must be very low, perhaps below **1 mW/cm<sup>2</sup>** for duty hours, but their exposure pattern is of particular interest because it infrequently includes exposures larger than **100 mW/cm<sup>2</sup>**. Although this experience will not support analysis in terms of a dose-response curve, it does permit a test of whether a carefully defined class of men, known to be exposed to the highest levels in the Navy environment, did in fact show disturbances in health associated with their occupation, i.e., with their exposure to microwave radiation. In addition to occupation *per se*, other relevant parameters of exposure are 1) length of time in the occupation and 2) power of equipment on the ship or aircraft at the time of exposure. To obtain information on these items, it was necessary to review individual personnel records. Although the rosters of study subjects could be established initially from school records and hospital admissions determined from magnetic tape files, it was necessary to review individual men's records for the records of assignments.

Since this procedure was both costly and time-consuming, it was decided to review individual records only for those men who died from disease, suicide or homicide (435 men) and for a 5 per cent randomly selected (using terminal digits of service numbers) sample of the rosters of living men in these occupations (960 men). An index of possible microwave exposure to individuals called the Hazard Number was constructed for those men whose individual records were reviewed. This consisted of the sum of the power ratings of all fire control radars aboard the ship, or search radars aboard the aircraft to which the technician was assigned, multiplied by the number of months of assignment. Types and power ratings of navigational radars were not available. This is not thought to be a serious deficit, however, because their power output is very low compared to the output, of gunfire control and search radars. To create the Hazard Number for an individual, it was necessary to trace his service assignments from ship to ship or from squadron to squadron. The Navy made available information concerning the radar equipment in service on each ship or patrol aircraft type at various times and from this, and the record of service assignments, the Hazard Number was created.

This description makes clear that the Hazard Number is a measure not of actual exposure but of potential exposure. A technician who has a low Hazard Number had little opportunity for exposure to high levels of microwaves, while men with large Hazard Numbers may have had substantial periods of such exposure.

The distribution of Hazard Numbers by rating in the high exposure group is shown in table 2. The FT and AT specialties had much larger proportions of men with large Hazard Numbers than did the ET group.

Unfortunately, year of birth was not obtained for the rosters generally (this information was not

given on the school records from which the rosters were selected); it was sought, however, for all of the men for whom individual abstracting was done (deaths from disease, homicide and suicide, plus 5% of the living men), so the rosters could be characterized.

In some instances, military records were incomplete and year of birth, although sought, could not be obtained: In the low exposure group this was true for 24 of the deaths and 38 of the living men in the 5 per cent sample, and in the high exposure group for 59 of the deaths and 100 of the men in the sample. Among the men for whom year of birth was available in the high exposure group, the Hazard Number was obtained for 1233, while in three cases some incompleteness in the records prevented Hazard Numbers from being calculated (table 3). Year of birth was not distributed proportionately in the six occupational specialty groups (table 4).

The mean age of the low exposure men was **20.7 years** where as **22.0 years** was the average age of the high exposure group. The high exposure groups, especially the Aviation Electronics Technicians, had more older men who were veterans of **World War II** and had re-enlisted, while the **Radio and Radar Operators** had much greater proportions of men who had been new recruits at the time of the **Korean War**. The airmen in both the high and low exposure groups were older than the men who served on ships.

## RESULTS

### Mortality

*Hazard Number by rating in the high exposure group: U.S enlisted Naval personnel exposed to microwave radiation during the Korean War period.*

**Table 2**

Hazard Number	Electronics Technician (ET)		Fire Control Technician (FT)		Aviation Electronics Technician (AT)	
	No.	%	No.	%	No.	%
0	249	27.8	16	6.6	32	12.5
1-2000	254	28.3	57	23.4	43	16.9
2001-5000	179	20.0	76	31.1	45	17.6
5001+	95	10.6	63	25.8	124	48.6
Unknown	119	13.3	32	13.1	11	4.3
<b>Total</b>	<b>896</b>	<b>100.0</b>	<b>244</b>	<b>100.0</b>	<b>255</b>	<b>100.0</b>

**TABLE 3**

*Year of birth and Hazard Number availability, by exposure group: U.S enlisted Naval personnel exposed to microwave radiation during the Korean War period.*

Exposure group	Deaths from disease, homicide and suicide	Living men, 5% sample
<b>Low exposure</b>	419	977
Year of birth not obtained	24	38
Obtained	395	939

<b>High exposure</b>	435	960
Year of birth not obtained	59	100
Obtained	376	860
<b>Hazard Number available</b>	<b>375</b>	<b>858</b>

**TABLE 4**

**Year of birth and mean age in 1952 by exposure rating: U.S enlisted Naval personnel exposed to microwave radiation during the Korean War period.**

	Low exposure*				High exposure†			
	RM	RD	AE	Total	ET	FT	AT	Total
Total	571	664	99	1334	778	213	245	1236
% born 1926 or earlier	1.9	3.6	31.3	4.9	8.0	14.6	18.8	11.3
Mean age (in years) in 1952 †	20.3	20.4	24.7	20.7	21.7	21.7	23.4	22.0

\* *RM = Radioman; RD = Radarman; AE = Aviation Electrician's Mate. † ET = Electronics Technician; FT = Fire Control Technician; AT = Aviation Electronics Technician.*

**TABLE 5**

**Mortality by cause of death (1950-1974): U.S enlisted Naval personnel exposed to microwave radiation during the Korean War period.**

Cause of Death	ICD code (8th Revision)	Low exposure*			High exposure†		
		RM	RD	AE	ET	FT	AT
№. of men		9253	10,116	1412	13,078	3298	3273
№. of deaths-all causes		296	308	61	441	144	198
Unknown cause		3	8	3	8	3	4
Accidental deaths	E800-E949	90	103	30	176	45	97
Motor vehicle	E810-E823	55	70	14	82	28	20
Air and space transport	E840-E845	6	1	8	32	1	62
Other accidental deaths	E800-E807 E825-ES38 E850-E949	29	32	8	62	16	15
Suicide, homicide and other trauma	E950-E999	42	32	6	58	15	20
Suicide	E950-E959	29	19	5	45	8	9
Homicide	E960-E969	8	9	1	7	6	3
Operation of war	E990-E999	1	1		3	1	7
Other	E970-E989	4	3		3		1
All diseases	000-796	161	165	22	199	81	77
Infective and parasitic disease	000-136	3	2		2		1
Malignant neoplasm's	140-209	39	47	8	65	16	27
Digestive organs and peritoneum	150-159	6	9	1	15	4	4
Respiratory system	160-10	10	6	2	16	.3	7
Skin	172-173	3	3		3		2
Eye, brain, other nervous system	190-192	3	4	1	5	3	
Lymphatic and hemato-							



poietic system	200-209	6	14		18	1	10
Other malignant Neoplasm's	Residue	11	11	4	8	5	4
Diseases of circulatory system	390-458	88	82	10	100	44	31
Diseases of digestive system	520-577	9	15	3	11	5	9
Other diseases	Residue	22	19	1	21	16	9

\* RM = Radioman; RD = Radarman; AE = Aviation Electrician's Mate.

† ET = Electronics Technician; FT = Fire Control Technician; AT = Aviation Electronics Technician.

Table 5 shows the deaths ascertained in each of the six occupational rosters. As noted above, the various rosters had different age distributions, so that differences in mortality experience cannot be interpreted directly without standardization for age. Nevertheless, certain contrasts are striking. The two groups of aviation technicians (AE and AT) and particularly the AE group had very high proportions of men who died as a result of aircraft accidents (1.7 per cent and 0.6 per cent) for the ET high exposure group, this percentage was 0.24 and there were only eight such deaths in the 22,667 men in the remaining three rosters. These differences arise, presumably, out of the greater flying experience of men in certain occupations.

Table 6 displays the numbers of deaths and age-standardized mortality ratios (MR) for all diseases and selected diseases. The MR (ratios of observed to expected numbers of deaths) are standardized for year of birth in three groups: born before 1927, from 1927 through 1931, or 1932 through 1936. The total experience of the high and low exposure rosters combined is taken as the standard. The MR for cause *i* in exposure group *j* was calculated as:

$$(d_{ii} / \sum d_{ik} \times (N_{jk} / N_{.k}))$$

where the sum is taken over the subscript *k*, denoting the year of birth group, the *d<sub>ik</sub>* are the observed, deaths, the *N<sub>ijk</sub>* are the numbers of men in the 5 per cent sample for whom year of birth was abstracted and subscript dots denote summation over the corresponding index. Table 6 is arranged in ascending order of presumed exposure so that the low exposure groups can be compared with the high exposure groups in total or with each of the two components of the high exposure group, and the two high exposure groups (ET and FT + AT) can also be compared with each other. Contrasts were assessed for statistical significance using the chi-square test, with correction for continuity.

**TABLE 6**

**Number of deaths from disease and mortality ratios by exposure class (1950-1974): U.S enlisted Naval personnel exposed to microwave radiation during the Korean War period.**

Cause of death	ICD code (8th Revision)	No.	Low exposure	High exposure*		
				Total ET	FT + AT	
All diseases	000-796	No. MR†	325 1.04	310 0.96	170 0.83	140 1.19
Malignant neoplasm's	140-209	No. MR	87 0.96	96 1.04	56 0.95	40 1.18
Digestive organs	150-159	No. MR	14 0.85	20 1.14	12 1.10	8 1.19

Respiratory tract	160-163	N <sub>e</sub> . MR	16 0.85	24 1.14	15 1.13	9 1.15
Lymphatic and hematopoietic System	200-209	N <sub>e</sub> . MR	20 0.83	26 1.18	15 1.06	11 1.40
Other malignant neoplasm's	Residue	N <sub>e</sub> . MR	37 1.19	26 0.82	14 0.68	12 1.06
Disease of circulatory system	390-458	N <sub>e</sub> . MR	167 1.07	151 0.93	87 0.85	64 1.08
Other disease	Residue	N <sub>e</sub> . MR	71 1.08	63 0.92	27 0.61	36 1.46

**\*ET = Electronics Technician; FT = Fire Control Technician; AT = Aviation Electronics Technician. t Mortality ratio standardized for year of birth; the combined experience of the low and high exposure groups is taken as the standard.**

If the low exposure group is compared with the high exposure group as a whole, none of the eight contrasts approaches statistical significance. For two causes, however, the MR for the ET group differs significantly from that of the combined FT + AT group for all diseases ( $p < 0.01$ ) and for "other diseases" ( $p < 0.01$ ). In both instances, the MR for the ET (lower average Hazard Number) is less than that for the FT + AT combination, but also, in both instances, the MR for the low exposure groups, occupies an intermediate position.

**TABLE 7**

**Mortality due to "other disease", high exposure group: U.S enlisted Naval personnel exposed to microwave radiation during the Korean War period.**

Cause of death	N <sub>e</sub> . of deaths*	
	ET	FT + AT
Alcoholism, alcoholic psychosis		2
Pneumonia	2	7
Cirrhosis of liver	5	10
Congenital abnormalities of cardiovascular system		
Ill-defined and unknown	2	4
Remainder of "other disease"	18	10
<b>Total</b>	<b>27</b>	<b>36</b>

**\* ET = Electronics Technician; FT = Fire Control Technician; AT = Aviation Electronics Technician.**

The finding of significant variation within the high exposure group between the ET and the FT + AT combination, for death from all diseases, derives from the finding for "**other diseases**"; deaths from malignant neoplasm's and circulatory system disease do not demonstrate significant variation either individually or combined. That the significant variation with respect to "other disease" derives from a multiplicity of causes is shown in table 7.

The division of deaths from presumably alcohol-use-related causes (cirrhosis and alcoholism) is five and 12 in the two groups, and this discrepancy is, in itself, significant at the 5 per cent probability level. The division of two and seven for deaths from pneumonia is also significant at the  $p = 0.05$  level. The remaining deaths are 20 among the ET and 17 among the FT + AT,



and the difference between the two groups is not significant.

Although the differences in mortality from malignant neoplasm's of the lymphatic and hematopoietic system are not statistically significant, since leukemia is a well known effect of ionizing radiation, some interest may attach to the specific causes of death within this group of causes (table 8).

**TABLE 8**

***Mortality from malignant neoplasm's of the lymphatic and hematopoietic system, high exposure group: U.S enlisted Naval personnel exposed to microwave radiation during the Korean War period.***

Cause of death	No. of deaths			
	Low exposure	High exposure*		
		ET	FT + AT	Total high exposure
Lymphosarcoma and reticulum cell sarcoma	4	5	1	6
Hodgkin's disease	7	3	2	5
Other lymphoid neoplasm's	1		1	1
Lymphatic leukemia	2		2	2
Myeloid leukemia	3	5	1	6
Monocytic leukemia	1	1	2	3
Other and unspecified leukemia	2	1	2	3
<b>Total</b>	<b>20</b>	<b>15</b>	<b>11</b>	<b>26</b>

***\*ET = Electronics Technician; FT = Fire Control Technician; AT = Aviation Electronics Technician. † No cases were designated as chronic lymphocytic leukemia.***

Table 9 shows the number of deaths and year-of-birth standardized mortality ratios in relation to the Hazard Numbers. As remarked in connection with table 6, none of the eight contrasts between the low exposure and total high exposure groups is statistically significant. If comparisons are made within the high exposure group between those having Hazard Numbers less than or more than 5000, there is a single significant difference: for malignant neoplasm's of the respiratory tract, for which the Mantel-Haenszel chisquare value is 3.87, corresponding to a probability just under 0.05. A test for increasing Cor decreasing) trend in the MRS with increasing Hazard Number similarly produced but a single significant result: for all diseases, the trend test returns a single degree of freedom chisquare of 4.67, corresponding top = 0.03.

### **Admissions to Navy hospitals.**

The magnetic tape files which record admissions to Navy hospitals were searched for the years 1952-1954 and 1956-1959 and admissions for the men in the study Were identified. As mentioned above, the file for 1955 was not available for matching. Table 10 shows the number of admissions and admission rates during military service by diagnosis and by exposure category.

Of the 18 comparisons between the low and high exposure groups taken in total, only two are statistically significant: the low exposure group had significantly larger admission rates for mental disease (P < 0.001) and for accidents, poisonings and violence (p < 0.01). For no disease class was the admission rate of the high exposure group significantly larger than that for the low exposure group.

**TABLE 9**

**Number of deaths from disease and mortality ratios by Hazard Number: U.S enlisted Naval personnel exposed to microwave radiation during the Korean War period.**

Cause of death Number	ICD 8 <sup>TH</sup> Rev.	Low		High Exposure, by Hazard			
		Exposure	Total	0	1-5000	5001+	
All diseases	000-79	N <sub>e.</sub> 325 MR 1.04	309† 0.96	63 0.82	160 0.91	86 1.23	
Malignant neoplasm's 29	140-209	N <sub>e.</sub> 87 MR 0.96	96 1.04	22 0.99	45 0.90	1.44	
Digestive organs	150-159	N <sub>e.</sub> 14 MR 0.85	20 1.14	6 1.49	11 1.14	3 0.78	
Respiratory tract	160-163	N <sub>e.</sub> 16 MR 0.85	24 1.14	4 0.82	10 0.86	10 2.20	
Lymph. & hematopoietic 8 system	200-209	N <sub>e.</sub> 20 MR 0.83	26 1.18	6 1.09	12 1.04	8 1.64	
Other malig. neoplasm's Residue		N <sub>e.</sub> 37 MR 1.19	26 0.82	6 0.78	12 0.70	8 1.17	
Diseases of circulatory system	390-450	N <sub>e.</sub> 167 MR 1.07	150 0.93	36 0.94	73 0.83	41 1.17	
Other disease	Residue	N <sub>e.</sub> 71 MR 1.08	63 0.92	5 0.30	42 1.13	16 1.08	

\* Mortality ratio standardized for year of birth; the combined experience of the low and high exposure groups is taken as the standard. One man (an Electronics Technician), date of birth known, Hazard Number unknown, was excluded from table 3 in table 2.

**TABLE 10**

**Number of admissions and admission rates per 1000 per year, to Navy hospitals 1952 - 1954 and 1956 - 1959 by diagnosis and exposure class: U.S enlisted Naval personnel exposed to microwave radiation during the Korean War period.**

Diagnosis* exposure†	ICD 7th Revision	Low		High					
		exposure N <sub>e.</sub>	Total Rate	N <sub>e.</sub>	ET Rate	FT + AT N <sub>e.</sub> Rate	N <sub>e.</sub>		
<b>Total</b>		<b>7789</b>	<b>127.3</b>	<b>7141</b>	<b>120.3</b>	<b>4156</b>	<b>114.0</b>	<b>2985</b>	<b>130.3</b>
Infective and parasitic diseases	001-138	941	15.4	958	16.1	624	17.1	334	14.6
Neoplasm's	140-239	434	7.1	374	6.3	239	6.6	135	5.9
Allergic, endocrine system, metabolic and nutritional diseases	240-289	135	2.2	107	1.8	62	1.7	45	2.0

Diseases of the blood and blood-forming organs									
290-299	10	0.2	7	0.1	6	0.2	1	0.0	
Mental, psychoneurotic and personality disorders									
300-326	394	6.4	306	5.2	178	4.9	128	5.6	
Diseases of the nervous system									
330-379	84	1.4	87	1.5	51	1.4	36	1.6	
Diseases of the eye and adnexa									
380-389	105	1.7	102	1.7	68	1.9	34	1.5	
Diseases of the ear, nose and throat									
390-398,510-510	123	2.0	141	2.4	70	1.9	71	3.1	
Acute respiratory infection									
470-493	1073	17.5	966	16.3	545	14.9	421	18.4	
Other diseases of respiratory system									
500-502,518-527	78	1.3	85	1.4	41	1.1	44	1.9	
Diseases of the circulatory system									
400-468	186	3.0	199	3.4	126	3.5	73	3.2	
Diseases of the digestive system and hernia									
536-587	670	10.9	680	11.5	410	11.2	270	11.8	
Diseases of the urinary system and male genital system									
590-617	544	8.9	484	8.2	272	7.5	212	9.3	
Diseases of the skin and cellular tissue									
690-716	610	8.3	456	7.7	260	7.1	196	8.6	
Diseases of the bones and organs of movement									
720-749	427	7.0	394	6.6	234	6.4	160	7.0	
Congenital malformations									
750-759	63	1.0	57	1.0	30	0.8	27	1.2	
Accidents, poisonings and violence									
N800-N999	1684	27.5	1471	24.8	788	21.6	683	29.8	
All other	Residual	328	5.4	267	4.5	152	4.2	115	5.0
<b>Person-years (1000)</b>		<b>61.2</b>		<b>59.4</b>		<b>36.5</b>		<b>229</b>	

***\*The diagnostic coding system used by the Navy during 1952-1959 is based on, although not identical in all respects with, the International Classification of Diseases (Sixth and Seventh Revisions). For convenience, we show the ICD 7th Revision codes which correspond to the major diagnostic classes used by the Navy. t ET = Electronics Technician., FT = Fire Control Technician; AT = Aviation Electronics Technician.***

Within the high exposure group, however, the FT and AT ratings had significantly higher admission rates than the ET group for five disease classes: Diseases of ear, nose and throat ( $p < 0.01$ ), acute respiratory disease ( $p < 0.01$ ), other respiratory disease ( $p < 0.02$ ), diseases of the urinary and male genital organs ( $p < 0.05$ ), and accidents, poisonings and violence ( $p < 0.001$ ). The first three classes of disease are, of course, closely related. It is noteworthy that, for the five diagnostic groupings shown above, the admission rates for the ET group, while significantly smaller than those for the FT + AT combination, are also smaller than the rates among the low exposure groups, significantly so in three instances: acute respiratory disease ( $p < 0.01$ ), diseases of the urinary and male genital organs ( $p < 0.05$ ), and accidents, poisonings and violence ( $p < 0.001$ ).

As has been seen, the various rosters are not strictly comparable with respect to such factors as age and time of entry upon service; the differences found in hospital admission rates could have resulted from these differences rather than from any effects produced by exposure to microwave radiation.

Table 11 shows hospitalizations and hospitalization rates by cause in the VA hospital system during the years 1963-1976 for the men under study. The VA actually employed two different systems for indexing hospitalizations during this period-the Inpatient Discharge Data System (IDDS) from 1963 to 1969 and the Patient Treatment File (PTF) thereafter. In table 11 we have combined information from both sources.

It is apparent from a comparison of tables 10 and 11 that only a small portion of the hospital experience of these veterans took place within the VA system: Thus, the low exposure group had 434 admissions to Navy hospitals for neoplasm's in the years 1952-1954 and 1956-1959, when, presumably, neoplasm's were in but only 94 such admissions to VA hospitals in the years

1963-1976, when, presumably, neoplasms were in fact occurring at increased rates as the cohorts aged. It has been estimated that less than 15% of veterans utilize the VA hospital system (12), and our data are consistent with this finding.

In view of the differences among rosters with respect to age and length of service, the very great selection involved in determining whether veterans go to VA or non-VA hospitals for their medical care precludes the drawing of any firm conclusions from these data.

Many of the differences in admission rates observable in table 11 are statistically significant, however. Comparing the rates for the entire low exposure and entire high exposure groups, significant differences are found for seven of the 16 diagnostic classes. In all seven classes, the low exposure group has the higher admission rate.

Within the high exposure group, if the ET group is compared with the combined FT + AT group, 11 of the 16 comparisons are significant, and in every case the ET have a lower admission rate than the FT + AT combination. If the ET (part of the high exposure group) are compared with the RM and RD in the low exposure group, no fewer than 11 significant differences are found, in every case the ET having the lower admission rate.

### Disability compensation.

Veterans who have a "**service-connected**" disability are entitled to receive an allowance from the VA entitled Disability Compensation. In essence, a disability is considered to be service-connected if it is a direct result of an injury received or illness contracted while in service. For certain diseases which have long latent periods, even if disease did not appear until after the veteran was separated from service, service connection is assumed if the clinical onset was within the "presumptive period" (e.g., seven years for multiple sclerosis).

**TABLE 11**

**Number of hospitalizations and hospitalization rates per 10,000 per year, in VA hospitals, 1963 - 1976, by diagnosis and exposure class: U.S. enlisted Naval personnel exposed to microwave radiation during the Korean War period.**

VA diagnostic class	Low exposure*						High exposure†					
	Total		RM + RD		AE		Total		ET		FT + AT	
	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate
Infective, parasitic	66	2.3	59	2.2	7	3.6	42	1.5	24	1.3	18	1.9
Neoplasm's, malignant	42	1.5	35	1.3	7	3.6	34	1.2	17	1.0	17	1.8
Neoplasm's, other	52	1.8	48	1.8	4	2.1	26	0.9	9	0.5	17	1.8
Allergic, endocrine system, metabolic and nutritional diseases	96	3.4	92	3.5	4	2.1	77	2.8	41	2.3	36	3.8
Blood, blood-forming organs	24	0.8	23	0.9	1	0.5	17	0.6	5	0.3	12	1.3
Alcoholism	129	4.5	119	4.5	10	5.2	105	3.8	45	2.5	60	6.3
Other mental disorders	369	13.0	332	12.5	37	19.3	276	10.1	166	9.3	110	11.6
Nervous system, sense organs	125	4.4	120	4.5	5	7.6	106	3.9	58	3.2	48	5.1
Circulatory	164	5.8	146	5.5	18	9.4	123	4.5	68	3.8	55	5.8
Respiratory	97	3.4	91	3.4	6	3.1	80	2.9	43	2.4	37	3.9
Digestive	359	12.6	320	12.0	39	20.3	255	9.3	132	7.4	123	13.0
Genitourinary	65	2.3	59	2.2	6	3.1	82	3.0	45	2.5	37	3.9
Skin, cellular	89	3.1	79	3.0	10	5.2	61	2.2	33	1.8	28	2.9
Bones, organs of movement	74	2.6	65	2.4	9	4.7	80	2.9	36	2.0	44	4.6
Trauma	109	3.8	96	3.6	13	6.8	108	3.9	53	3.0	55	5.8
Symptoms, ill-defined conditions, special exams and other	223	7.8	176	6.6	18	9.4	151	5.5	85	4.8	66	6.9

Person-years (1000)    28.48            26.56            1.92            27.39            17.89            9.50

**\*RM = Radioman; RD = Radarman; AE = Aviation Electrician's Mate. t ET = Electronics Technician; FT = Fire Control Technician; AT = Aviation Electronics Technician.**

Table 12 shows by diagnostic group the numbers of men who were receiving disability compensation as of December, 1976. The VA's computerized file of compensation awards does not enable the retrieval of terminated or disallowed disability claims by cause of disability. The data bear some similarity to the data previously examined on VA hospitalizations. In general, rates in the low exposure group are intermediate between the rates for the ET and the FT + AT combination in the high exposure group.

Comparing the low exposure group with the total high exposure group, only a single difference is statistically significant, for mental conditions, where the rates of 7.1 per thousand (low exposure) and 4.8 per thousand (high exposure) differ at the  $p < 0.01$  significance level.

### TABLE 12

Within the high exposure group, the FT + AT rates are higher than ET rates for most diagnostic groups, and significantly so in five instances: Musculoskeletal system, including disorders of bone, joint and muscle, loss of part of the extremities, osteomyelitis and neoplasm's of bone or muscle ( $p < 0.001$ ), organs of special sense, which includes eye cataracts ( $p < 0.05$ ), respiratory system, excluding pulmonary tuberculosis which is included among "systemic conditions" ( $p < 0.01$ ), cardiovascular system ( $p < 0.001$ ), and mental disorders, including psychoses, psychoneurotic disorders and so-called "psychophysiologic disorder ?" ( $p < 0.05$ ).

Although the rates for the FT + AT group exceed those for the ET group within the high exposure group, they do not significantly exceed the rates in the low exposure category for any of the 15 diagnostic groups.

### DISCUSSION.

**Number of men receiving VA compensation, December 1976, and rates per 1000 men by diagnosis and exposure class: U.S enlisted Naval personnel exposed to microwave radiation during the Korean War period.**

VA compensation and pension diagnosis group	Low exposure				High exposure*			
	No.	Rate	No.	Rate	Total No.	Rate	ET No.	FT + AT Rate
Musculoskeletal	288	13.9	234	11.6	115	8.8	119	16.9
Organs of special sense								
	103	5.0	91	4.5	49	3.7	42	6.0
Systematic conditions	4	0.2	8	0.4	3	0.2	5	0.7
Respiratory	116	5.6	106	5.3	55	4.2	51	7.3
Cardiovascular	99	4.8	90	4.5	43	3.3	47	6.7
Digestive	155	7.5	129	6.4	74	5.7	55	7.8
Genitourinary	68	3.3	50	2.5	31	2.4	19	2.7
Hemic, Lymphatic	10	0.5	3	0.1			3	0.4
Skin	144	6.9	141	7.0	83	6.3	58	8.2
Endocrine	31	1.5	26	1.3	15	1.1	11	1.6
Neurological	33	1.6	37	1.8	21	1.6	16	2.3
Nerves	26	1.3	18	0.9	15	1.1	3	0.4
Epilepsies								
	12	0.6	4	0.2	4	0.3		
Mental conditions	147	7.1	97	4.8	51	3.9	46	6.5
Other	12	0.6	9	0.4	7	0.5	2	0.3
<b>Total No. of men</b>		<b>20,781</b>		<b>20,109</b>		<b>13,078</b>		<b>7031</b>

\* **ET = Electronics Technician; FT = Fire Control Technician; AT = Aviation Electronics Technician.**

Differential health risks attributable to occupational exposure to radar in the Navy over 20 years ago are not apparent with respect to long-term mortality patterns or hospitalized illness around the period of exposure, two endpoints for which there is virtually complete information for the total study group. Later hospitalization (in VA facilities only) and awards for service-connected disability, the two other endpoints examined, provide incomplete information. For some diagnoses, significant differences among the occupational classes have been found with respect to mortality, Navy hospital admission rates, VA hospitalization rates and disability compensation status, but it does not appear likely that the differences are a direct result of microwave exposures. Although the men whose occupational exposures were greatest (FT and AT) had higher mortality from disease and larger admission rates in Navy and VA hospitals than the less highly exposed (ET), so did the minimally exposed groups (RM and RD), especially with respect to VA hospital admissions. Mortality differences appear to be linked to amount of flying, and perhaps to alcohol consumption. VA hospital admission rates are difficult to interpret since they are generated by only a small and highly selected fraction of the men in each occupational roster; Navy hospital admission rates during service were higher for low exposure groups than for the intermediate high exposure group (ET). With regard to service-connected disabilities, claims rather than awards would have greater relevance for differential morbidity, but information on disallowed claims was not available.

Because no measures of actual exposure as opposed to potential exposure were available, the so-called "high exposure" rosters were made up of a mixture, in unknown proportions, of men whose actual exposures varied from large to negligible. If a large proportion of the men in fact had very small exposures, the consequence would have been to obscure by dilution

any differences which might have been found had it been possible to study a large group of men who had received large exposures. Further, it is possible that effects involving the cardiovascular, endocrine and central nervous systems do exist, but are transient, disappearing with the termination of exposure or soon thereafter, or are not perceived to be sufficiently consequential to result in admission to hospital.

The results demonstrate that in a large group of men, many of whom may have received substantial exposures, any health effects which occurred were insufficient to be clearly perceptible at the level of mortality or hospital morbidity at the time of exposure. These results are consistent with those reported by Lilienfeld et al. (13) in their recent study of persons exposed to microwave radiation while serving at the **U.S Embassy in Moscow**. These authors were unable to demonstrate differences in any of a large number of indices of health status. The exposures were low, however, even by Soviet standards.

It was not possible in this study to determine occupational exposure to microwaves after discharge from service, hospitalization outside the Navy and VA systems, frequency and nature of non-hospitalized medical conditions during and after service or reproductive performance and health of offspring. A subsample of living men with high and low exposure patterns during service, however, can be identified for intensive individual follow-up. This would permit assessment of the functional, non-specific: and behavioral signs and symptoms reported to affect health and work performance.

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## **Comentarios personales.**

Este artículo es otra prueba más de los argumentos que vengo publicando, esos eventuales, investigadores, médicos, catedráticos, expertos, ingenieros, etc..... no podrán seguir pretendiendo hacernos creer que no existen hoy día informes científicos sobre este tema, este es uno de los tantísimos informes que existen realmente, no fue fácilmente de obtener, tuvo que venir del otro lado del planeta, pero la prueba es irrefutable de que existe realmente, desde décadas existen informes sobre los efectos peligrosos de las micro-ondas !, hace poco también he publicado el informe sobre las investigaciones científicas del **Profesor Polaco Stanislaw Szmigielski**, sobre el mismo tema, mismas conclusiones, sólo que el estudio de **Szmigielski** es más reciente, (**1996**), pero todos llegan a las mismas conclusiones. Después de haber leído estos informes científicos, el **Síndrome del Golfo y de los Balcanes** creo que es mucho más evidente la **causa/efecto** !

Los estudios que se efectuaron en el pasado eran precedentes al desarrollo de la telefonía inalámbrica, desde que esta industria se ha desarrollado, no ha hecho más que bloquear y impedir que estudios perjudicables a esta tecnología sé conduzcan y se publiquen, ya se sabe lo que les ha sucedido a varios prestigiosos investigadores en este gremio: el **Dr. Ross Adey, el Dr. George Carlo, el Profesor Roger Santini, la Profesora Olle Jahansson, el Dr. Claudio Gómez Peretta** etc.....

Por qué bloquear las investigaciones de estos prestigiosos investigadores, si estas frecuencias

son inocuas !

Si son inocuas, por mucho que investiguen ellos mismos se auto-desacreditaran científicamente, lo más extraño en esta polémica es que nadie demuestra con certitud que son inocuas, pero todo el mundo se queja de toda una serie de dolencias !

Más tragedias siguen informándose, esta vez la tragedia cayo en Girona, en el **Municipio de Figueres**, (Gerona) otros tres niños en el **Colegio Les Escolápies de Figueres** han contraído tumores cerebrales, desgraciadamente un adolescente el hijo de 9 años de la Deputada **Sra. Alicia Sánchez Camacho** ha fallecido, los otros dos adolescentes de edades similares están en fases terapéuticas, es un poco prematuro para tirar conclusiones apropiadas, me gustaría conocer, si utilizaban un móvil, si en sus casas respectivas utilizan un teléfono domestico inalámbrico y si en sus lugares residenciales están irradiados por alguna otra estación de base, etc..... también se informa que estos adolescentes ya habían contraído esta patología antes de implantar las antenas, si ya salieron tres casos, más saldrán según informan que tienen al lado del colegio, es que se han efectuado mediciones **?**, si ya estaban pre-expuestos y luego fueron expuestos durante las horas escolares como en los casos de **Valladolid y Ronda** va de sí, **5.600 Voltios/m** es más que suficiente para haber causado 12 patologías cancerigenas, tres fallecimientos y 5 abortos espontáneos y solamente en el Municipio de Ronda, estas potencias son suficientes como para matar a un elefante en poco tiempo, por tanto están aun muy por debajo de los **41.183 Voltios/m** en la frecuencia de **900 Mhz** y **58.249 Voltios/m** en la frecuencia de **1.8 Ghz**, por tanto el Ministerio de Ciencia y Tecnología avanza que son inocuas y sin peligro alguno para las personas expuestas, la prueba esta ahí, (**Torre vieja 13 fallecimientos, Ronda tres fallecimientos, Sabadell tres fallecimientos, Figueres un fallecimiento**, etc..... y los que se anunciaran aun más !) se sabe hoy día que la **causa/efecto** los primeros a padecer son los niños por ser estos tres veces más sensibles que las personas adultas y por estar en procesos de desarrollo metabólicos, que será de esos adolescentes que están utilizando los móviles cotidianamente como si se tratase de un juego **!**, tres casos en el mismo colegio es como para hacerse seriamente preguntas, no creo que esta vez achacaran los hechos al museo del lado, o a agentes atmosféricos contaminantes, esos padres que sus hijos utilizan un móvil que no les sorprenda un día que el Clínico les anuncien muy malas noticias, todos los informes científicos concluyen lo mismo, que informes positivos pueden aportarnos la industria inalámbrica de que sus actividades profesionales son inocuas para todo ser viviente **?**

Las victimas y personas que incurrn ignorancia y avasallamiento de sus peticiones ante las diversas administraciones concernidas, pueden consultar este Sitio:

[www.euro-ombudsman.ei.int](http://www.euro-ombudsman.ei.int)

Este sitio tiene correspondencia en todas las lenguas de la Unión Europea e incluso la lengua española, podrán expresar sus dolencias en materia de derechos civiles y administrativos que padecen ante las diversas administraciones del país concerniente.

La antena que tuve que denunciar aquí, ya comienzan las personas expuestas a quejarse de varias dolencias, yo no soy capaz de parar en ese lugar ni cinco minutos, otro amigo ya se queja de dolores de cabeza y una sensación muy rara en ese lugar, el dependiente también me comunico que resiente dolores de cabeza, estas personas son las que les había advertido, los que no lo saben, resentirán efectos sin saber de que o donde vienen, irán al medico, este no encontrara nada, se efectuaran exámenes no se encontrara nada en particular al no ser alteraciones inmunológicas sanguíneas u otras **!**, lo más extraño en este lugar es que el medidor dice **0.00 Voltios/m**, en otro lugar me sucede lo mismo, se miden niveles bajísimos, pero yo no puedo aguantar ni 5 minutos en esos lugares, que hay en correlación, los dos lugares están irradiados por alguna antena **GSM**, en estos dos casos precisos la sola explicación lógica es que hay una segunda armonía eléctrica en las estalaciones internas de esas casas, este tema es aun más grave y complicado de lo que nadie se ha imaginado, según la Comuna, me ha informado que ellos no disponen de ningún expediente sobre esta antena, ni si quiera el **Servicio de Urbanismo de la Región de Bruselas Capital**, esta bajo encuesta administrativa, todo señala que se ha puesto ilícitamente y a escondidas de todas las autoridades confundidas, de mismo que muchas otras más por todo Bruselas que casi nadie saben lo que son, aplazadas al exterior

del lugar laboral o residencial !

Ya se ha hablado en numerosas ocasiones de los efectos atérmicos o específicos, en todos los casos que se han detectado casos de cánceres, ningún científico en el mundo podrá demostrar que fueron efectos térmicos los que han podido causar tantas patologías en un determinado y reducido lugar, en el caso de **Ronda**, de **9 señoras que cayeron en cinta, 5 abortaron espontáneamente**, es lógico que eso suceda, si el feto se desarrolla anormal, la naturaleza entra en acción y rechaza el feto, aquí se dio el mismo caso en varias ocasiones que yo conozca, y entra en la larga lista de patologías de las exposiciones a las micro-ondas.

**0.1  $\mu$ Vatios/cm<sup>2</sup> = 0.614 Voltios/m. Valores si se quieren reducir los riesgos de cáncer.**

**0.1  $\mu$ Vatios/cm<sup>2</sup> = 194 Volts/m. Valores de riesgo de aborto, interrupción del sueño, la performance infantil in-par y síntomas de fatiga crónica.**

En los artículos publicados como por ejemplo dicho, las exposiciones de estas frecuencias no se han podido determinar de manera exacta como en los casos informados de constataciones patológicas en la península, por ser más recientes y con más conocimientos científicos sobre esta tecnología:

- **16 casos en Torreveja (13 fallecimientos).**
- **17 casos en Valladolid.**
- **15 casos en Ronda (3 fallecimientos).**
- **3 casos en Córdoba.**
- **14 casos en Elche.**
- **15 casos en Patraix.**
- **6 casos en Sabadell (3 fallecimientos).**
- **3 casos en Figueres (1 fallecimiento)**

**Esto nos da un total de 74 casos (20 fallecimientos) informados por ahora !**

Aquí los operadores están aplazando antenitas muy pequeñas un poco por toda Bruselas, entre 10 a 50 cms de alto en cualquier lugar, a veces al exterior en la fachada donde trabajan los empleados o vive gente, el tabaco aquí, según la **Tele**, 50 belgas se mueren diariamente, lo que hace 18.250 fallecimientos al año + los accidentes de la ruta ni si quiera 25.000 año, la (**SNCB**) ya impiden de fumar mismamente en los trenes, esto ya resulta alarmante, por otro lado esta sociedad termina de ceder a sus maquinistas 5.000 móviles, o sea, si las micro-ondas afectan la concentración mental y la memoria lo peor esta aun por el camino, eso si que va a ser alarmante, porque todos estarán afectados, en una aseguradora mía ya les había advertido que incurrían un grave peligro, están en el **7º** a unos **150 metros** de una estación de base, se miden nada menos que **1.8 Voltios/m** donde trabajan esos empleados, y así sucesivamente por todo Bruselas. Dos aseguradoras, unas de las más grandes mundiales, la **Lloyds of London** y la **Allianz de Alemania**, consideran que el riesgo de la contaminación electromagnético es más peligroso que el terrorismo internacional, por eso estas dos aseguradoras se niegan a asegurar los riesgos de esta industria. Por tanto la **Allianz** hace frente al peligro europeo del terrorismo, mientras rechaza frontalmente asegurar los riesgos de la contaminación electromagnética. El **Profesor Neil Cherry** en un informe realizado a petición de la **Unión Europea** afirma: "**La conclusión de mi investigación es que la Radiación Electromagnética es perjudicial para el cerebro, corazón, feto, hormonas y células**", la **Unión Europea** pide que se le elabore un informe sobre este tema, del otro lado el **Consejo de la Unión Europea** ignora las advertencias del **Profesor Neil Cherry** (.....) por lo tanto supone una amenaza para la vida inteligente, la radiación electromagnética interactúa a través de resonancias con los cuerpos y las células, interfiriendo con la comunicación inter-celular, su crecimiento y regulación y está dañando la base genética de la vida, ante tales declaraciones de parte de unos de los más competentes científicos sobre este tema, las compañías de seguros desmienten las posturas tranquilizadores del lobby eléctrico (**ICNIRP**), de los gobiernos y del **Consejo de la Unión Europea**, cuando estos afirman y pretender hacernos creer que los campos electromagnéticos son inocuos y totalmente seguros, recientemente **Iberdrola** ha dicho que emisiones magnéticas del orden de: **1000 mGauss** son inocuas, decir es fácil, demostrarlo es otra cosa, la data científica sobre este tema hoy día es

muy exhaustiva, mucho mas clara que la posición de la industria de comunicaciones inalámbricas, las dos tiene el mismo hecho en común, "**Campos Electromagnéticos**" se sabe hoy día y científicamente demostrado que a partir de: **2 mGauss** ya causan enfermedades patológicas, esto se sabe hoy sin ambigüedad alguna, **10 Voltios/m** en (*campo/eléctrico*) las personas expuestas a estos tipos de campos electromagnéticos después de un cierto tiempo de exposición canónica contraen patologías cancerígenas.

Los efectos devastadores del ultimo pasaje del "*Niño*" entre **1997-1998**, costo sólo a los **EE.UU** nada menos que **\$22 Billones** de dólares, y cada día este tipo de alborote climático se incrementara más y mas, de una parte son los gases que se emiten en la atmósfera, de otra parte es el calentamiento por ionización de la atmósfera que producen los campos electromagnéticos especialmente las múltiples estaciones de enlace de la telefonía móvil, que explicación científica se dio a lo que sucedió en **Melilla** el día **23 de julio del 2001 ?**, un aumento de **18° C** a las **7.55** de la mañana en **5 minutos** es un poco inesperado y inexplicable !, no si han tenido en cuenta las experiencias que los rusos y americanos están efectuando para controlar el clima !

El **Dr. Michael Repacholi** de la **Organización Mundial de la Salud** en Ginebra no da respuesta a las varias peticiones concierne la referencia (**ISBN**) de la publicación **EMNI** de **1981** que ha publicado la **OMS** !

El lector que desee obtener copia del informe original del (*Estudio de Corea*) lo puede obtener contactándome a mi **e-mail** !

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