

MEMORANDUM

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FROM: E. C. Irby, M.D. - E-L-9

DATE: February 25, 1991

SUBJECT: 1991 Medical Directors Forum

At the Forum Meeting last week, a number of subjects came up with information which should be useful to Reynolds. Since the Pepperidge Farm (Campbell Soup) OSHA fine of \$4.2 million, there has been renewed interest in ergonomics and cumulative trauma diseases. It was estimated that 60% of the OSHA reportable cases were due to cumulative trauma. Back injuries accounted for 40% of this. The general feeling was that there is nothing new about this problem, only the perception. Companies which have carried out training programs have not seen any decrease in cumulative trauma disease (CTD). OSHA has no expert and no real data in this area. As I understand it, it is being supervised by a toxicologist. Campbell Soup has hired two expert consultants and plans to take OSHA to court.

The subject of Non-Ionizing Radiation came up. Apparently, NIOSH feels there is a problem. The Bell Telephone Companies have studied radiation from video display terminals and found no relationship between exposure and miscarriages, the linemen and cable splicers have been studied because of their exposures. There has been no evidence of brain tumor or leukemia in their study. Non-ionizing radiation comes in two forms. Electrical fields generated by voltage charge - this has no importance. And then magnetic fields generated by electrical flow. As you will remember, reduction pots generate 75-100 gauss. Dr. Craig Wright has estimated 200 gauss. This needs to be compared with the average background level of the earth's magnetic field of .5 gauss. Movement through the earth's magnetic field increases this dosage tremendously so that jet supersonic travel would increase this exposure logarithmically. And lastly, there is no practical means of shielding against magnetic fields.

Man-made mineral fibers came up in our discussion. This was discussed by the doctors from BP American and Corning Fiberglass. The Swiss study with very high doses of refractory ceramic fibers showed 33% of the hamsters developed malignant mesothelioma. As I

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J+ ff :
Affect the OSHA fine
reduction might
feel exposure
over estimated -
50-100 is more
like it - however
Toxicologist
higher levels (300s)
is possible
said

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understand it, Carborundum is doing a study of its former employees. Active employees have shown only a small difference in forced vital capacity in the exposed versus the non-exposed. There were no cases of interstitial fibrosis but 2-1/2% showed pleural plaque, the significance of which they were not sure. As Corning said, its fiberglass filaments have one problem and that is itching. It is difficult to get a significant exposure at work and they are not really of the respirable range. As a matter of fact, there is no requirement for labeling. There is a micro fiber made by Manville used for filtration and aircraft insulation which represents 1% of the U.S. fiberglass production. This runs .1 to 1 micron and is respirable. In animal studies, a significant number of mesotheliomas were produced.

In summary, there is no evidence of human disease except for pleural plaques and minimal pulmonary function changes. In animals, a significant number of mesotheliomas were produced.

Considerable time was spent on Managed Health Care. Some of the Bell Companies now use Employee Assistance as a "gate keeper" for admission to substance abuse treatment. Other companies are in the process of implementing this. Alexander and Alexander did a five year study at McDonnell Douglas which proves the advantage of EAP managed admissions. I'll try to get a copy of this study. Without EAP approval, some companies require the employee to pay 20%. Some companies like Kodak, U.S. Steel and General Mills at some of their locations are getting into complete general medical care for employees and dependents. The problem of whether to pay for non-FDA approved (experimental) treatments came up. One or two of the companies applied the following four criteria to make an exception.

1. Whether it is biologically plausible.
2. Whether there is sufficient published data on this method of treatment.
3. Whether this is a protocol in a quality health care institution.
4. Has the patient already tried unsuccessfully the standard treatment for the problem.

The question was raised as to whether the companies routinely placed on the OSHA log all cases which showed an STS as specified by OSHA. Only 50% of the hands were raised in response to this question. It was of interest that Alcoa lists them on the log only after a shift great enough to constitute hearing impairment. In North Carolina and Michigan apparently, these requirements are different.

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Lastly, in talking with the Director of OSHA, several people related that the future direction would be to bring the very well designed safety programs of top management to the shop floor. He felt that the policies were not being carried out where the "rubber meets the road."


E. C. Irby, M.D.

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Tesla T	MilliTesla mT	MicroTesla µT	Gauss G	MilliGauss mG	Comment (See CAVEAT - below !)
12.	12,000.	12,000,000.	120,000.	120,000,000.	*LLNL - Mirror Fusion Test Facility (Hypothetical)
2.	2,000.	2,000,000.	20,000.	20,000,000.	MRI (Magnetic Resonance Imaging) Peak Field
1.	1,000.	1,000,000.	10,000.	10,000,000.	MRI (Magnetic Resonance Imaging) Average Field
0.5	500.	500,000.	5,000.	5,000,000.	SLAC - Stanford Linear Accelerator Center Field
0.1	100.	100,000.	1,000.	1,000,000.	*Strong Magnetic Field* - Engineering Definition
0.05	50.	50,000.	500.	500,000.	Sickle Cell Disease Exposure Limit, Ferrous Tool Limit
0.02	20.	20,000.	200.	200,000.	Aluminum Reduction "Pot" Field - SLAC 8 Hour Limit
0.010	10.	10,000.	100.	100,000.	ADOE 8 Hour Limit - Arc Welder Common Field
0.001,4	1.4	1,400.	14.	14,000.	Lowest Response Level In Tests Of Pacemaker Reed Switches
0.001,0	1.0	1,000.	10.	10,000.	*LLNL - Pacemaker And Implanted Prosthesis Guideline
0.000,5	0.5	500.	5.	5,000.	*Pacemaker Safe* - Food And Drug Administration
0.000,4	0.4	400.	4.	4,000.	REMOVELY POSSIBLE OPERATOR ENCOUNTER - ZEEMAN 5100 FIELD
0.000,1	0.1	100.	1.	1,000.	Common Airline Security Metal Detector Field
0.000,05	0.05	50.	0.5	500.	AVERAGE BACKGROUND LEVEL EARTH'S MAGNETIC FIELD
0.000,02	0.02	20.	0.2	200.	Proposed Pacemaker Exposure Limit - German VDE 0848
0.000,01	0.01	10.	0.1	100.	High Voltage Transmission Line - Edge Of Right-Of-Way
0.000,005	0.005	5.	0.05	50.	Household Appliance/Tool Field - Line Printer Field
0.000,001	0.000,1	1.	0.01	10.	Common Factory Floor Field - Electric Blanket Field
0.000,000,7	0.000,07	0.7	0.007	7.	POSSIBLE OPERATOR ENCOUNTER - ZEEMAN 4100 FIELD
0.000,000,5	0.000,05	0.5	0.005	5.	Common Business Office Field - Xerographic Copier Field
0.000,000,3	0.000,03	0.3	0.003	3.	Average Residential Household Field
0.000,000,1	0.000,01	0.1	0.001	1.	Log-Cabin-In-The-Woods Field (No Utilities)

IRPA/INRC Guidelines on limits of exposure to 50/60 Hz

Occupational	mT	mG
Whole Working Day	0.5	5,000
Short Term	5.0	50,000
General Public		
Up To 24 Hours/Day	0.1	1,000
Few Hours/Day	1.0	10,000

IRPA: International Radiation Protection Association
 INRC: International Non-Ionizing Radiation Committee in
 cooperation with the World Health Organization (WHO)

MAGNETIC FIELD MATRIX
 February 14, 1991 - CCW

CAVEAT - Currently there are no official international standards or guidelines for whole body or implanted prostheses exposures to magnetic fields. Above values must be viewed as approximations for high to low ranking. In many cases they represent mid-range (average, median, mode) compromises where reported measurements have a spread of one order of magnitude (Example - office equipment 10 mG to 100 mG). Almost certainly, the field levels reported in the multiple documents which were studied represent rounded values. No consideration is made in this matrix for important factors such as static vs. time-varying fields, frequency, wave form, rate of field strength change, peak strength, cumulative dose, etc.

*LLNL = Lawrence Livermore National Laboratory
 SLAC = Stanford Linear Accelerator Center
 ADOE = U. S. Department Of Energy

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