ISSN: 0975-833X

Available online at http://www.journalcra.com

INTERNATIONAL JOURNAL OF CURRENT RESEARCH

International Journal of Current Research
Vol. 14, Issue, 02, pp.20731-20735, February, 2022

DOI: https://doi.org/10.24941/ijcr.43112.02.2022

REVIEW ARTICLE

GEOELECTROMAGNETIC FIELD (GEF): A STUDY SO FAR

[1]Patil, M.S., [1]Sanap, V.B., [2]Surashri Sonawane, [2]Neeta Sarode, [3,*]Dharmadhikari, N.P. and [4]Kulkarni S.D.

[1]Department of Physics Yeshwantrao Chavan College of Art, Commerce and Science, Sillod, Aurangabad-431112,(MS) India
[2]Department of Environmental Science, Tuljaram Chaturchand College of Arts, Science and Commerce Baramati 413102 (MS) India
[3]Department of Engineering Physics, Sinhgad Academy of Engineering, Kondhwa, Pune 411048(MS), India
[4]Department of Environmental Science, New Art, Commerce and Science College Ahmednagar-414001 (MS) India

ARTICLE INFO

Article History:
Received 17th November, 2021
Received in revised form
29th December, 2021
Accepted 24th January, 2022
Published online 28th February, 2022

Keywords:
Geoelectromagnetic Field,
Underground Water, Human Health.

****Corresponding author:***
Dharmadhikari, N.P.

ABSTRACT

This paper incorporates some of the research findings related to detection and effect of Geoelectromagnetic Field (GEF) is presented. The effect of GEF on various areas of built environment in general is elaborated and hypothesis of origin of GEF is discussed. It is to be seen that underground water is the main source which produced GEF. Such location is very harmful to human being as well as animals. However in-depth study to detect GEF and to study its effects is necessary

Citation: Patil, M.S., Sanap, V.B., Surashri Sonawane, Neeta Sarode, Dharmadhikari, N.P. and Kulkarni S.D. "Geoelectromagnetic Field (GEF): A Study So Far.", *2022. International Journal of Current Research, 14, (02), 20731-20735.*

INTRODUCTION

According to the Chinese, Geoelectromagneic Field (GEF) is the detrimental effect of earth's radiations and environmental radiations on the health of a human body. In general, there are two types of energies, natural energy and artificial energy that affect the human body. According to Bird (1994), natural energy is produced due to groundwater (GW) movement, and presence of natural radioactive materials inside the earth, whereas man-made energy (artificial) is the result of the use of electromagnetic radiation technology like radars, radios, televisions, computers, cell phones, microwaves, Wi-Fi systems and many others. Natural energy is again divides into two part i.e. natural electromagnetic energy and subtle energy (Mark Kriker, 2006).

Background of the Research Related to Detection and Effect of GEF: Initial interest in the idea of GEF was stimulated by the work of Winzer and Melzer in Germany in the 1920's. They found some geological faults present in the area of Stuttgart city which had the highest incidence of cancer. Von-Pohl (1929), a German aristocrat, selected the Bavarian community of Vilsbiburg with 8300 inhabitants. Under the supervision of the mayor and the local police, who signed a protocol describing the survey (1.1000 maps), he dowsed the underground veins which he claimed were likely to cause cancer. His map was compared to plotting of cancer deaths in houses by the town's medical officer. The beds of the cancer patients were confirmed to have stood directly above the water veins i.e. GEF he indicated. Curry (1950), drew a conclusion about the crucial role played by a unique earth grid (later called as 'The Curry Grid' in his honour) in the development of cancer. Hartmann E. (1964) has written a book called 'Illnesses as a Problem of Location'. Hartmann, in his book, has suggested for the first time that everyone should construct buildings by considering the GEF region. For 14 years, Austrian scientist Kathe Bachler (1976), a teacher, dowser and author of book Earth Radiation; a bestseller in Europe, made a study of the importance of sleeping in a safe place, free from

natural radiation. In over 11,000 cases, she was able to show a strong correlation between beds over dangerous radiation (GEF) and learning difficulties, illness and cancer. Fischer and Baumann (1985) have already detected some location differences regarding the well-being of students in a dormitory. People who were sleeping above a GEF zone, identified by an experienced dowser had significantly more severe symptoms of Zerssen's BL-symptom checklist than students sleeping on more neutral zone (NZ). In the same study, the sleeping quality remained unaffected, which is in contrast to numerous reports in the popular literature. Tromp (1994), hinted that a human system passing at high speeds through a field would undergo changes on the operating conductor such as the ground water stream and the body skin potential would decrease. The American Nobel Prize winner, Melvin Galwin, who studied amongst other things, the effects of carcinogenic tar on the skin of hamsters, found that hamsters did not develop cancer as anticipated, until they were kept in GEF places. Hence GEF is a weak electromagnetic field created by subterranean running water, certain mineralogical concentration, fault line and underground cavities (Bird, 1993).These potentials are related to electric currents in the ground and are observed to rise vertically from the ground water veins to the earth's surface over head up to a distance of 220 km(Tristle, 2003). Roy and Ann (2000) indicate that the Sick building Syndrome identified by the World Health Organization is generally rooted in the existence of the ground water vein , which he termed as black streams in a property. He has also indicated that people suffer from various diseases like arthritis, cancer, sick building syndrome etc. due to the radiations being emitted out from the ground.

Croome (1994) observed that such houses may be difficult to sell because of GEF. Some people seem to feel that there is something wrong with the house, although they would be unable to identify what it is. Some people also realize that they have never felt well since they moved into a particular house. Occasionally complete roads can be affected by the GEF, because of which there is a rapid turnover of owners. People die, divorce or unhappy people just sell off the house because they do not feel at home on these streets. Houses sometimes get the reputation for being unlucky places to live. Bird (1993), has indicated that the presence of subterranean features like ground water vein can be identified with visual clues like discontinuity in a hedge, broken windows panes, existence of anthills, beehives and diseased trees. He has highlighted the effect of the terrestrial radiation on the microorganisms, as an enhanced activity of the microbes. The human system contains electrical, mechanical, thermal, hydraulic, pneumatic, chemical and various other types of sub systems, which interact with the external environment. According to Silk (1999), four micro volts is generated in a body when a person walks at rate of one meter per second, on the other hand if person runs at a rate of 1 meter per second he could generate 400 microvolt per meter.(Connectivity is missing Looks like appearing suddenly). Another study focused on possible health effects of 'earth rays' on children: Grandaunet et al. (1999) found that the health status as measured by different parameters was considerably affected by 'earth rays.' Kharat (2000), through his investigation on mysterious spots on national highways, observed that the reaction time of a driver changes on GEF which leads to accidents while driving. Similar type of investigation is carried out in this work on Mumbai- Pune expressway and Pune- Solapur national highway. The change in the reaction time is observed on both static and dynamic conditions of vehicle. Also, he identified the accidental spot using biolocation method like L-rods. Deming D, (2002) found that even in modern age, the belief in GEF zones is widespread. Dowsing, is used to detect 'water veins' and 'earth rays' which are assumed to cause GEF. This has been known in one or other form in nearly all cultures and civilizations. Alexander Dubrov (2008), has measured the brain waves with an electroencephalograph (EEG) on GEF. Measurement of brain waves was carried out on people who had their eyes open and who were sensitive in normal awakened conditions. It has been observed that the brain reacted very strongly on EEG, when the person entered into the GEF. The GEF brain frequency abruptly decreased and the amplitude increased. Dr. Hagar, Privy Councillor C. Williams checked the houses of 5348 people in the town of Stenttin, who had died of cancer and found that in all the cases, strong GEF zone had crossed their homes. Of special interest, was a survey of three homes for the elderly people in the town over the previous five years. In the home, beneath which strong GEF zones were found, thirty eight had died of cancer. In the home with weak GEF, two had died of cancer. In the home with no GEF at all, nobody had died of cancer. In five houses built over particular strong GEF lines, he found an average of thirty eight cancer cases over a period of twenty one years (Rolf Gordon, 2005)
Hacker et.al (2005) tested 52 people with gas discharge visualization (GDV) system and has mentioned this in "scientifically traceable effects and ways of harmonization". The most important parameter to be analyzed was the GDV or the glow image area (i.e. area of glow). The significant differences in the physical area of glow parameters were also observed for the integral parameters which were analysed, and it led to the conclusion that the two different regions within a room (GEF vs. neutral GEF) exerted different influence on a human body which could have created a GEF phenomenon. In GEF, the areas detected for glow are statistically and significantly much smaller as compared to the areas in neutral zone.

Pimplikar (2010), through his experimental investigations has confirmed that 30% of accidents that occur on Yashwantrao Chavan Expressway took place due to existence of GEF. Hacker, G.W., Eder, A., Augner, C,(2008), A very recent study carried out at the Veterinary Medical University of Zurich (Switzerland) in two cow barns showed that milk from the cows in tie-stalls standing above GEF had increased milk cell counts, indicating higher amount of stress present at such places. In addition, morning melatonin sulfate concentrations in urine were lower at GEF zone than at neutral zone (NZ). Cows at GEF zone also seem to have a higher tendency to catch claw or udder inflammations. Using the Geowave device, melatonin levels were significantly increased and the milk cell counts went down. GEF disturbs almost every part of a built-up environment. This energy infiltrates metals, concrete as well as other substances which have large amount of permeability. In the road environment, the concrete may get debilitated and cracks may develop because of such forces. The chances of lightening affecting such areas of GEF are more. Hence GEF is considered as one of the "Threats to a built-up/ building environment". O.V.Stepanov (2015) says GEF are responsible for change in the driver's psychophysiology. A. P. Dubrov considers GEF are geophysical anomalies and calls it as reactive zones in which people react differently to the effect of territorial radiations. According to A. P. Dubrov, GEF on highways are particularly dangerous. He says, a short time stay in such zones causes the

drivers a sudden loss of consciousness and orientation as a result of particular stress. GEF is conventionally detected by ancient technique called as Dowsing. Copper L-Rod, coconut, Y-twig spring rod and pendulum can be used for detection of GEF in dowsing technique. In a critical study carried out by scientist at the Delft University of Technology in the Netherlands, expressed that they had carried out an experiment which they say has proved one of the most basic claims of the quantum theory- wherein objects that are separated by a great distance can immediately affect each other's behaviors. This finding is a blow to one of the principals of standard physics called as "locality". It states that an object is directly controlled by its nearby surroundings. According to the scientist in Delft University measuring of one particle would immediately affect the other, irrespective of the distance that separates them (New York Times, 2015). Dowsing works on same principal. Dowsing is a method of divining, which is defined as "a problem solving technique which apparently utilizes a motor automatism in conjunction with mechanical instrument to obtain information otherwise unknown to the dowser". (Hansen, 1982) The first electronic device for detection of GEF zones which is an indicator of geopathic anomalies (IGA) was developed in 1992. Hacker et.al (2008) designed a new technique called GDV (Gas Discharge Visualization) which can measure the stress. Electrostatic voltmeter can also be used to detect GEF zones since it can measure all forms of static electricity. Trifield, natural EMF meter which is designed by Lee (1995) can detect extremely weak static form of electric and magnetic field. After studying all these instruments for detection of GEF zone, it can be concluded that L-rod dowsing is one of the reliable and economical techniques for detection of GEF. There are also some limitations of the available GEF measurement devices such as electrostatic voltmeter, which cannot detect GEF that generates an electric current of less than 1 volt. Thus, electrostatic voltmeter is not a sensitive measuring device. Other devices also have an accuracy up to ± 20-25%, which means the precision of measurement is much less. Such instruments cannot be used for critical cases such as detection of GEF zones on highways and expressways for accidental studies.

The ability to identify certain natural fields is called 'Dowsing' (Harvalik, 1978 and Frilotc C, 2007). Dowsing can be done by various instruments such as L-rod, coconut, y-twig pendulum etc. These are the most common techniques to detect ground water veins or GEF zones. Graves (1990) classified the devises used for dowsing in three groups depending on mechanical properties such as:-

- Devices that use static neutral balance :- Lord Coconut
- Devices that use unstable tension :- Y shaped twig
- Devices that use dynamic neutral balance :- Pendulum

Chadwick et.al (1971) tested 150 people and showed that their rod movements were linked with tiny changes in the intensity of electro-motive force. Simmons (2003) a geophysicist, conducted surveys of magnetic fields around dowsed wells near Boston that yielded huge quantities of water. These wells were found to be within a narrow magnetic anomaly resulting from a geological fracture zone that was channelizing the flow of groundwater. Douglas (1973) has found groundwater veins of intersecting type, under the sleeping places of 55 patients being treated for arthritis. Baig (1985) confirmed the locations of groundwater veins identified by bio location technique (dowsing) using the earth geo-resistivity meter technique.....

He was of the opinion that results achieved by bio location technique were quicker than that of the resistivity method. Ross (1990) has established that the cellular human nervous system is a gigantic antenna; constantly picking up all sorts of information from the environment. Betz (1995) related the bio locator reaction to the subtle electromagnetic gradients resulting from the fissures and water flows, creating changes in the electrical properties of rock and soil. Wertheimer, N. (1980) has put forth use of 'L' rods as transducers in the form of a simple electroscope, wherein the L rods get charged due to static electricity from the human system. Silk (1999) has compared the human brain to a natural internet, responsive not only to endogenous signals, but also to exogenous signals. The human system has been sensitive to static electricity and geomagnetism. He has also found out that 8% increase in the speed while cutting across the natural geomagnetic field of the earth increases the internally produced electrical field by 100 times. Kharat (2000) has suggested that in case of nadir direction, each construction site would have a unique characteristic depending upon the subterranean features of the earth. Carrubaa (2007) it can be assumed that dowsers have some type of clearly trained magnetic sense which enables them to detect particular natural fields.

Leitgeb and Lukas (2008) tried to find out whether certain biological and biopsychological parameters were affected by location. They found significant effects and no association between these parameters and dowser's reports. Sorate (2015),after experimental investigations were carried out on the expressway, it was found that there is a change in the geotechnical properties of the soil in GEF zone when it is compared to normal zone. Moisture content, specific gravity, liquid limit and density increase whereas plastic limit decreases in GEF zone. Voids ratio increases as moisture content increases in GEF zone, so proper compaction of soil is to be carried out while constructing national highways and expressways. Increase in comp active effort has much less effect in the case of cohesion less soil than that of cohesive soil. If cohesion less soil is present in GEF zone there are chances of failure of pavement. Thus, a lot of importance is given to soil without cohesion which is present in GEF zone.

Hypothesis of origin of Geoelectromagnetic field (GEF): An attempt was made here to explain, all possible natural sources of GEF like groundwater, piezoelectricity and natural radioactivity.

Groundwater (Stringy waterways): Water (H2O)-molecules being dipolar in their nature can also become a part of the cause of electromagnetic fields that originate from ground water. The effects of underground water are evident up to several floors up. The adverse health effects may include deprivation of regenerating sleep resulting in arthritis, cancer, enhanced production of microbes encouraging mould and rot, degenerative diseases and rheumatism. The water molecules of moving underground water interact with the structure of the strata it is flowing through, producing a positive vertical electrical field, a DC generated magnetic field, radio frequencies ranging 87-101 MHz and ultra-short waves which are organized into narrow bands about 8-10 cm wide (Meyl, 2004; Hacker, 2008).

Piezoelectricity: In 1880 Curie brothers discovered that certain asymmetric crystals exhibit piezo-electric effects. In this effect, if one pair of opposite faces of crystals is subjected

to pressure, then equal and opposite charges are developed on the other pair of opposite faces of crystal. There is direct proportion between the mechanical pressure and resultant charge. The effect is exhibited by many naturally occurring crystals but it is most prominent in quartz, tourmaline, zinc-blendes and Rochelle salt (sodium potassium tarta-rate). However it is quite well known that 12 % all these crystals for are available in Earth's upper crust and is the most found mineral next to feldspar. Due to mechanical pressure, when a crystal lattice cell is compressed, it results in imbalance forming and displaying of a very small electrical voltage. Vice versa, if a voltage is applied to quartz it is triggered and it oscillates. However in some region of earth where these types of crystals were found then there will be GEF may be present (Hacker, 2005; Kharat,2000).

Natural Radioactivity: Natural radioactivity also has a role to play in the GEF phenomenon. This phenomenon often occurs in areas where there is a abundance of granite and gneiss as well as in the areas where radon gas is found (e.g. thermal springs etc.).However, a considerable discussion of the starting of radioactivity and its effects from the earth would be beyond the scope of this work (Kopp, 1970).

Concluding Remarks

Literature review present that GEF can be identified using dowsing methods, which however are non scientific in nature, and hence are not accepted by the scientific fraternity. It is therefore extremely essential to identify GEF using a scientific technique. Also, the study GEF detects the adverse effect it has on the usual working system of any human being and other species. While extensive literature is accessible on the above mentioned issue, references which are related to identification of GEF are a piecemeal. The present work therefore attempts to investigate the detection and study the nature of GEF. It is to be seen that there are various sources of GEF. Groundwater is the important source that generates GEF. Such areas are very harmful to human's beings as well as to animals. However, an in depth study has been carried out to detect it and to study its nature.

REFERENCES

Alexander Dubrov,2008.Geopathic zones and Oncological Diseases, Proceedings of the Druskininskai Lithuania congress on 'Earth's Fields and Their Influence on Human Beings' pp 42-44.

Baig ,M.Y,1985.Water-divining and geophysical exploration for ground water: Assoc.Hydrol. India,4th annual convention and seminar on hydrology, Hissa, III-4 III5.

Betz, H.D., 1995. Unconventional water detection: field test of the dowsing technique in dry zones: part 1. J. Sci. Explor.9, 159–189.

Bird,1994. The Divining Hand, Whitford Press, ISBN-0924608161, P-372.

Bird, C., 1993. Divining hand.Shiffer Publishing, USA.

Carrubba, S., Frilot II, C., Chesson Jr, A.L. and Marino, A.A., 2007. Evidence of a nonlinear human magnetic sense. Neuroscience144(1), 356–367.

Chadwick, D.G. and Jensen, L., 1971. The Detection of Magnetic Fields Caused by Groundwater. Reports: Utah Water Research Laboratory.

Croome, D.J., 1994. The effect of geopathic stress on building occupants. Renewable Energy5(5), 993–996.

Curry Manfred,1950. Das Reaktionslinien system als krankheitsauslösender Faktor, Hippokrates, Heft pp-19.

Deming D., 2002. Water witching and dowsing,Ground Water ,40: pp 450–452.

Duglus H.,1973. Taking another look at the Arthritis Dowsing Link, The Banner, Bennington, Vermount, 86 P.

Fischer, K.M, Baumann, 1985. An empirical investigation about geopathy [in German]. Z Parapsychol Grenzgebiete Psychol,27, pp 105–115.

Frilot C., 2007 Evidence of a nonlinear human magnetic sense. Neuroscience, 144, pp 356–367.

Grandaunet, B.H,1999. Children exposed to ''earth rays'' are not more frequently ill than other children [in Norwegian, Abstract in English]. Tidsskr Nor Laegeforen ; 119:3,pp 896–898

Graves, 1990, "The diviners handbook". Destiny books, one park street, Rochester, Vermont 05767 ISBN 0- 89281-303-2.

Hacker GW, Pawlak E, Pauser G, et al. 2005. Biomedical evidence of influence of geopathic zones on the human body: Scientifically traceable effects and ways of harmonization. ForschKomplementarmed Klass Naturheilkd, 12, pp 315–327.

Hacker, G.W., Eder, A., Augner, C. and Pauser, G., 2008. Geopathic stress zones and their influence on the human organism. In:Proceedings of the Druskininskai congress on Earth's Fields and Their Influence on Human Beings. pp.8–17.

Hansen G.P. 1982. Dowsing: a review of experimental research, J. Soc.

Hartmann E, 1964. Illness as a problem of location. Heidelberg:Karl F Haug Verlag,pp 56.

Harvalik, Z.V., 1978. Anatomical localization of human detection of weak electromagnetic radiation: experiments with dowsers. Physiol. Chem. Phy.10(6), 525–534.

Kathe Bachler, 1976, Earth Radiation, Word Asters Ltd, ISBN 978-4357-0246-2, P114.

Kopp,J.A. 1970, ' Healthy living by Elimination of soil Influences Detrimental to Health',Journal of Swiss Society for Housing , No.11.

Kharat, A.G., 2000. Empirical and theoretical investigation on built environment. lib.unipune.ac.in.

Lee, 1995, "Trifield Natural EMF meter". Product handbook, 3-4.

Leitgeb N, Lukas R.,2008. Should hospitals protect from geopathogenic zones? Wien Med Wochenschr, 158 pp 42–48.

Mark Kriker, 2006. 'What stand beyond Dowsing & Feng Shui?' Published by ECO Dowsing LIC NJ 07410, pp-26-27.

Meyl L, (2004), Scalar waves. From an extended vortex and field theory to a technical, biological and historical use of longitudinal waves. INDEL GmbH Publishers, Villingen-Schwenningen, ISBN 3-9802 542-4-0, P-653-654.

O.V.Stepanov, 2015. "Trafic safely and Geopathogenic zones"Technical science,Trafic Kharkiv National Automobile and HighwaysUniversity, Ukraine.

Pimplikar S.S., 2010. Empirical and theoretical investigations of accidents on expressways and national highways. lib.unipune.ac.in.

Rolf Gordon,(2005), Are you sleeping in a safe place, Dulwich Health , 7th edition.45P

Ross T. E. and Wright, R.D.,1990. The Diving Mind. Destiny Books, USA.

Roy & Ann Procter .,2000.Healing Sick Houses, (Dowsing for Healthy Homes), Gateway, Gill & Macmillan ltd, Hume Avenue, Dublin 12, ISBN- 978 07171 2992 8, P43.

Silk, A., and Cown,D. (1999), Ancient Energies of the earth, Thorsons, P319.

Simmons ,M.R., (2003), 'Energy technology overview', Trends and strategies for funding E&P technology Offshore technology conference, Houston ,TX, P-27.

Sorate R.R., 2016. Empirical and theoretical investigations for attenuation of geopathic stress on expressways and national highways. lib.unipune.ac.in.

Tristle, 2003, Earth rays the silent killer, Elsevier Publication Compsany, NewYork, 28-43.

Tromp, S.W., 1949, Physical Physics, "A Scientific analysis of dowsing-Radesiheia and Kindern Phenomenon", Elsevier Publication Company, NewYork, 43-45.

Von Pohl G F,1929. 'Earth rays as pathogens': Causative factors of cancer and other diseases, Frech-Verlag, Stuttgart ISBN 13:978-3-7724-9402-4, 7-17P.

Wertheimer, N., 1980, Electrical Wiring Configuration and Childhood Cancer, Journal of Epidemiology, 111,pp.273-284.

****