

EMF and health: source library

232 sources on health, exposure, clinical care and infrastructure policy. Updated Oct

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A curated index, not a systematic review. Separate articles may share data. Full URL

ID	Topic	Reference and website
EMF-001	Proceedings	Request for Information on Electromagnetic Fields (EMFs), Radiofrequency (RF) Radiation, and Wireless Radiation Exposure. 2026. Website: Federal Register
EMF-002	Proceedings	FCC record refresh on RF exposure guidelines following Environmental Health Trust remand. 2026. Website: GovInfo, U.S. Government Publishing Office
EMF-003	Legal	Environmental Health Trust v. FCC, 9 F.4th 893 (D.C. Cir. 2021). 2021. Website: U.S. Court of Appeals for the D.C. Circuit
EMF-005	Legal	47 U.S. Code § 332 - Mobile services. 2024. Website: Legal Information Institute, Cornell Law School
EMF-006	Legal	47 CFR § 1.1307 - Actions that may have a significant environmental effect, for which Environmental Assessments (EAs) must be prepared. Website: Legal Information Institute, Cornell Law School
EMF-007	Legal	47 U.S. Code § 302a - Devices which interfere with radio reception. Website: Legal Information Institute, Cornell Law School
EMF-008	Legal	47 CFR Part 15 - RADIO FREQUENCY DEVICES. Website: Legal Information Institute, Cornell Law School
EMF-009	Occupational	1910.97 - Nonionizing radiation. Website: Occupational Safety and Health Administration

EMF-010	Occupational	Radiofrequency and Microwave Radiation - Overview. Website: Occupational Safety and Health Administration
EMF-011	Occupational	Radiofrequency and Microwave Radiation - Hazard Locations and Solutions. Website: Occupational Safety and Health Administration
EMF-012	Occupational	Radiofrequency and Microwave Radiation - Health Effects. Website: Occupational Safety and Health Administration
EMF-013	Measurement	Radiofrequency and Microwave Radiation - Evaluating RF and Microwave Exposure. Website: Occupational Safety and Health Administration
EMF-014	Standards	Guidelines for Limiting Exposure to Electromagnetic Fields (100 kHz to 300 GHz). 2020. Website: PubMed, U.S. National Library of Medicine
EMF-015	Standards	Guidelines for limiting exposure to time-varying electric and magnetic fields (1 Hz to 100 kHz). 2010. Website: PubMed, U.S. National Library of Medicine
EMF-016	Standards	FCC KDB 447498 D01 General RF Exposure Guidance v06. 2015. Website: InspectAPedia (document mirror)
EMF-017	Standards	Radio Frequency Safety. Website: Federal Communications Commission (Internet Archive copy)
EMF-018	Standards	Limits of Human Exposure to Radiofrequency Electromagnetic Energy in the Frequency Range from 3 kHz to 300 GHz - Canada.ca. 2015. Website: Government of Canada
EMF-019	Measurement	Technical Guide for Safety Code 6: Health Canada's Radiofrequency Exposure Guidelines - Canada.ca. Website: Government of Canada

EMF-020	Standards	Understanding Safety Code 6: Health Canada's radiofrequency exposure guidelines - Canada.ca. Website: Government of Canada
EMF-021	Measurement	TN-261 — Safety Code 6 (SC6) Radio Frequency Exposure Compliance Evaluation Template (Uncontrolled Environment Exposure Limits). Website: Innovation, Science and Economic Development Canada
EMF-022	Standards	2015 Revisions to Safety Code 6: Summary of Consultation Feedback - Canada.ca. 2015. Website: Government of Canada
EMF-023	Standards	SCHEER - scientific evidence on radiofrequency. 2022. Website: European Commission, Public Health
EMF-024	Public health	Cell Phones and Cancer Risk Fact Sheet - NCI. Website: National Cancer Institute
EMF-025	Public health	Electromagnetic Fields and Cancer - NCI. Website: National Cancer Institute
EMF-026	Public health	Cell Phones. Website: U.S. Food and Drug Administration
EMF-027	Public health	Review of Published Literature between 2008 and 2018 of Relevance to Radiofrequency Radiation and Cancer. 2020. Website: U.S. Food and Drug Administration
EMF-028	Public health	Facts About Cell Phones and Your Health. Website: Centers for Disease Control and Prevention
EMF-029	Public health	Electric & Magnetic Fields. Website: National Institute of Environmental Health Sciences
EMF-030	Public health	EMF Electric and Magnetic Fields Associated with the Use of Electric Power. Website: National Institute of Environmental Health Sciences

EMF-031	Public health	Radiation: Electromagnetic fields. Website: World Health Organization
EMF-032	ELF health	Extremely Low Frequency Fields. 2007. Website: World Health Organization
EMF-033	ELF health	IARC Publications Website - Non-ionizing Radiation, Part 1: Static and Extremely Low-frequency (ELF) Electric and Magnetic Fields. 2002. Website: International Agency for Research on Cancer
EMF-034	RF cancer	IARC Publications Website - Non-ionizing Radiation, Part 2: Radiofrequency Electromagnetic Fields. 2013. Website: International Agency for Research on Cancer
EMF-035	RF cancer	Ken Karipidis, Dan Baaken, Tom Loney, Maria Blettner, Chris Brzozek, Mark Elwood, Clement Narh, Nicola Orsini, Martin Rösli, Marilia Silva Paulo, Susanna Lagorio. The effect of exposure to radiofrequency fields on cancer risk in the general and working population: A systematic review of human observational studies - Part I: Most researched outcomes. Environment International. 2024. DOI: 10.1016/j.envint.2024.108983. Website: PubMed, U.S. National Library of Medicine
EMF-036	RF cancer	The effect of exposure to radiofrequency fields on cancer risk in the general and working population: A systematic review of human observational studies - Part II: Less researched outcomes. Environ Int. 2025. DOI: 10.1016/j.envint.2025.109274. Website: PubMed, U.S. National Library of Medicine
EMF-037	RF cancer	Feychting M et al.. Mobile phone use and brain tumour risk - COSMOS, a prospective cohort study. Environment International. 2024. DOI: 10.1016/j.envint.2024.108552. Website: PubMed, U.S. National Library of Medicine

EMF-038	RF cancer	Cellular Telephone Use and the Risk of Brain Tumors: Update of the UK Million Women Study. 2022. Website: PubMed, U.S. National Library of Medicine
EMF-039	RF cancer	INTERPHONE Study Group. Brain tumour risk in relation to mobile telephone use: results of the INTERPHONE international case-control study. International Journal of Epidemiology. 2010. DOI: 10.1093/ije/dyq079. Website: PubMed, U.S. National Library of Medicine
EMF-040	RF cancer	Acoustic neuroma risk in relation to mobile telephone use: results of the INTERPHONE international case-control study. 2011. Website: PubMed, U.S. National Library of Medicine
EMF-041	RF cancer	Risk of brain tumours in relation to estimated RF dose from mobile phones: results from five Interphone countries. 2011. Website: PubMed, U.S. National Library of Medicine
EMF-042	Measurement	Estimation of RF energy absorbed in the brain from mobile phones in the Interphone Study. 2011. Website: PubMed, U.S. National Library of Medicine
EMF-043	RF cancer	Mobile phones, cordless phones and the risk for brain tumours. 2009. Website: PubMed, U.S. National Library of Medicine
EMF-044	RF cancer	Mobile phone use and the risk for malignant brain tumors: a case-control study on deceased cases and controls. 2010. Website: PubMed, U.S. National Library of Medicine
EMF-045	Scientific debate	Joel M Moskowitz et al.. COSMOS: A methodologically-flawed cohort study of the health effects from exposure to radiofrequency radiation from mobile phone use. Environ Int. 2024. DOI: 10.1016/j.envint.2024.108807. Website: PubMed, U.S. National Library of Medicine

EMF-046	Scientific debate	Response to the Letter to the Editor regarding "Mobile phone use and brain tumour risk - COSMOS, a prospective cohort study". 2024. Website: PubMed, U.S. National Library of Medicine
EMF-047	Scientific debate	Response to the letter to the editor regarding "Mobile phone use and brain tumour risk - COSMOS, a prospective cohort study". 2024. Website: PubMed, U.S. National Library of Medicine
EMF-048	Scientific debate	RE: Cellular Telephone Use and the Risk of Brain Tumors: Update of the UK Million Women Study. 2022. Website: PubMed, U.S. National Library of Medicine
EMF-049	Scientific debate	RE: Cellular Telephone Use and the Risk of Brain Tumors: Update of the UK Million Women Study. 2022. Website: PubMed, U.S. National Library of Medicine
EMF-050	Children	Castaño-Vinyals G, Sadetzki S, Vermeulen R et al.. Wireless phone use in childhood and adolescence and neuroepithelial brain tumours: Results from the international MOBI-Kids study. Environment International. 2022. DOI: 10.1016/j.envint.2021.107069. Website: PubMed, U.S. National Library of Medicine
EMF-051	Children	Mobile phone use and brain tumors in children and adolescents: a multicenter case-control study. 2011. Website: PubMed, U.S. National Library of Medicine
EMF-052	Scientific debate	A critical analysis of the MOBI-Kids study of wireless phone use in childhood and adolescence and brain tumor risk. 2022. Website: PubMed, U.S. National Library of Medicine

EMF-053	Children	Impact of Radiofrequency Exposure From Mobile Phones on the Risk of Developing Brain Tumors in Korean and Japanese Adolescents: A MOBI-Kids Case-control Study. 2023. Website: PubMed, U.S. National Library of Medicine
EMF-054	Measurement	Estimation of RF and ELF dose by anatomical location in the brain from wireless phones in the MOBI-Kids study. 2022. Website: PubMed, U.S. National Library of Medicine
EMF-055	Methods	Impact of random and systematic recall errors and selection bias in case--control studies on mobile phone use and brain tumors in adolescents (CEFALO study). 2011. Website: PubMed, U.S. National Library of Medicine
EMF-056	Methods	The MOBI-Kids Study Protocol: Challenges in Assessing Childhood and Adolescent Exposure to Electromagnetic Fields from Wireless Telecommunication Technologies and Possible Association with Brain Tumor Risk. 2014. Website: PubMed, U.S. National Library of Medicine
EMF-057	Children	Foerster M, Thielens A, Joseph W, Eeftens M, Rösli M. A Prospective Cohort Study of Adolescents' Memory Performance and Individual Brain Dose of Microwave Radiation from Wireless Communication. Environmental Health Perspectives. 2018. DOI: 10.1289/EHP2427. Website: PubMed, U.S. National Library of Medicine
EMF-058	Children	Memory performance, wireless communication and exposure to radiofrequency electromagnetic fields: A prospective cohort study in adolescents. 2015. Website: PubMed, U.S. National Library of Medicine
EMF-059	Animal cancer	National Toxicology Program. NTP Technical Report 595: 900 MHz RF exposure in rats. NTP Technical Report 595. 2018. DOI: 10.22427/NTP-TR-595. Website: National Toxicology Program

EMF-060	Animal cancer	NTP Technical Report 596: 1,900 MHz RF exposure in mice. 2018. Website: National Toxicology Program
EMF-061	Animal cancer	Falcioni L et al.. Report of final results regarding brain and heart tumors in Sprague-Dawley rats exposed from prenatal life until natural death to mobile phone radiofrequency field representative of a 1.8 GHz GSM base station environmental emission. Environmental Research. 2018. DOI: 10.1016/j.envres.2018.01.037. Website: PubMed, U.S. National Library of Medicine
EMF-062	Animal cancer	Mevissen M et al.. Effects of radiofrequency electromagnetic field exposure on cancer in laboratory animal studies, a systematic review. Environment International. 2025. DOI: 10.1016/j.envint.2025.109482. Website: PubMed, U.S. National Library of Medicine
EMF-063	Scientific debate	Meike Mevissen, Angélique Ducray, Jerrold M Ward, Annette Kopp-Schneider, James P McNamee, Andrew W Wood, Tania M Rivero, Kurt Straif. Corrigendum to "Effects of radiofrequency electromagnetic field exposure on cancer in laboratory animal studies, a systematic review" [Environ. Int. 199 (2025) 109482]. Environment International. 2026. DOI: 10.1016/j.envint.2026.110368. Website: PubMed, U.S. National Library of Medicine
EMF-064	Scientific debate	Belenki D, Baaken D, Meyer F, Kuhne J. Commentary on the systematic review of radiofrequency field exposure and animal cancer by Mevissen et al. (2025) - Revisiting the evidence and aquantitative perspective. Environment International. 2026. DOI: 10.1016/j.envint.2026.110154. Website: PubMed, U.S. National Library of Medicine
EMF-065	Scientific debate	Meike Mevissen et al.. Methodologically solid and analytically rigorous: the evaluations of our systematic review on RF-EMF and animal cancer are reliable. Environ Int. 2026. DOI: 10.1016/j.envint.2025.109962. Website: PubMed, U.S. National Library of Medicine

EMF-066	Animal cancer	In Vivo Studies on Radiofrequency (100 kHz-300 GHz) Electromagnetic Field Exposure and Cancer: A Systematic Review. 2023. Website: PubMed, U.S. National Library of Medicine
EMF-067	Animal cancer	A Systematic Review on the In Vivo Studies on Radiofrequency (100 kHz-300 GHz) Electromagnetic Field Exposure and Co-Carcinogenesis. 2024. Website: PubMed, U.S. National Library of Medicine
EMF-068	Methods	Effects of radiofrequency electromagnetic fields (RF EMF) on cancer in laboratory animal studies. 2022. Website: PubMed, U.S. National Library of Medicine
EMF-069	Scientific debate	Study on experimental animals and cancer provides no reason to change ARPANSA's assessment on the safety of wireless technology. Website: Australian Radiation Protection and Nuclear Safety Agency
EMF-070	Scientific debate	DORIS - Digitales Online Repositorium und Informations-System: Spotlight on "Effects of radiofrequency electromagnetic field exposure on cancer in laboratory animal studies : A systematic review" by Mevissen et al. in Environment International (2025). 2025. Website: German Federal Office for Radiation Protection
EMF-071	Scientific debate	DORIS - Digitales Online Repositorium und Informations-System: Spotlight on "In Vivo Studies on Radiofrequency (100 kHz–300 GHz) Electromagnetic Field Exposure and Cancer: A Systematic Review" by Pinto et al. in International Journal of Environmental Research and Public Health (2023). 2024. Website: German Federal Office for Radiation Protection

EMF-072	Scientific debate	DORIS - Digitales Online Repositorium und Informations-System: Spotlight on "The effect of exposure to radiofrequency fields on cancer risk in the general and working population: A systematic review of human observational studies – Part I: Most researched outcomes" by Karipidis et al. in Environment International (2024). 2025. Website: German Federal Office for Radiation Protection
EMF-073	Scientific debate	Scientific evidence invalidates health assumptions underlying the FCC and ICNIRP exposure limit determinations for radiofrequency radiation: implications for 5G. 2022. Website: PubMed, U.S. National Library of Medicine
EMF-074	ELF health	A pooled analysis of magnetic fields and childhood leukaemia. 2000. Website: PubMed, U.S. National Library of Medicine
EMF-075	ELF health	L Kheifets et al.. Pooled analysis of recent studies on magnetic fields and childhood leukaemia. Br J Cancer. 2010. DOI: 10.1038/sj.bjc.6605838. Website: PubMed, U.S. National Library of Medicine
EMF-076	ELF health	A pooled analysis of magnetic fields, wire codes, and childhood leukemia. Childhood Leukemia-EMF Study Group. 2000. Website: PubMed, U.S. National Library of Medicine
EMF-077	ELF health	A pooled analysis of extremely low-frequency magnetic fields and childhood brain tumors. 2010. Website: PubMed, U.S. National Library of Medicine
EMF-078	ELF health	Exploring exposure--response for magnetic fields and childhood leukemia. 2010. Website: PubMed, U.S. National Library of Medicine
EMF-079	ELF health	Childhood leukemia, electric and magnetic fields, and temporal trends. 2006. Website: PubMed, U.S. National Library of Medicine

EMF-080	ELF health	A precautionary public health protection strategy for the possible risk of childhood leukaemia from exposure to power frequency magnetic fields. 2010. Website: PubMed, U.S. National Library of Medicine
EMF-081	ELF health	Effects of extremely low frequency magnetic fields on animal cancer and DNA damage: A systematic review and meta-analysis. 2025. Website: PubMed, U.S. National Library of Medicine
EMF-082	Occupational	Anke Huss et al.. Occupational exposure to extremely low-frequency magnetic fields and the risk of ALS: A systematic review and meta-analysis. Bioelectromagnetics. 2018. DOI: 10.1002/bem.22104. Website: PubMed, U.S. National Library of Medicine
EMF-083	Occupational	Amyotrophic lateral sclerosis, occupational exposure to extremely low frequency magnetic fields and electric shocks: a systematic review and meta-analysis. 2020. Website: PubMed, U.S. National Library of Medicine
EMF-084	Occupational	Occupational exposure to extremely low frequency magnetic fields and risk of Alzheimer disease: A systematic review and meta-analysis. 2018. Website: PubMed, U.S. National Library of Medicine
EMF-085	Occupational	Future needs of occupational epidemiology of extremely low frequency electric and magnetic fields: review and recommendations. 2009. Website: PubMed, U.S. National Library of Medicine
EMF-086	Reproduction	De-Kun Li et al.. Exposure to Magnetic Field Non-Ionizing Radiation and the Risk of Miscarriage: A Prospective Cohort Study. 2017. Website: PubMed, U.S. National Library of Medicine

EMF-087	Reproduction	A population-based prospective cohort study of personal exposure to magnetic fields during pregnancy and the risk of miscarriage. 2002. Website: PubMed, U.S. National Library of Medicine
EMF-088	Reproduction	Ryan Pw Kenny, Eugenie Evelynne Johnson, Adenike M Adesanya, Catherine Richmond, Fiona Beyer, Carolina Calderon, Judith Rankin, Mark S Pearce, Mireille Toledano, Dawn Craig, Fiona Pearson. The effects of radiofrequency exposure on male fertility: A systematic review of human observational studies with dose-response meta-analysis. Environment International. 2024. DOI: 10.1016/j.envint.2024.108817. Website: PubMed, U.S. National Library of Medicine
EMF-089	Reproduction	Effects of radiofrequency electromagnetic field (RF-EMF) exposure on male fertility: A systematic review of experimental studies on non-human mammals and human sperm in vitro. 2024. DOI: 10.1016/j.envint.2024.108509. Website: PubMed, U.S. National Library of Medicine
EMF-090	Reproduction	The effects of radiofrequency exposure on adverse female reproductive outcomes: A systematic review of human observational studies with dose-response meta-analysis. 2024. Website: PubMed, U.S. National Library of Medicine
EMF-091	Reproduction	Effects of Radiofrequency Electromagnetic Field (RF-EMF) exposure on pregnancy and birth outcomes: A systematic review of experimental studies on non-human mammals. 2023. Website: PubMed, U.S. National Library of Medicine
EMF-092	Reproduction	Impact of non-ionising radiation of male fertility: a systematic review. 2025. Website: PubMed, U.S. National Library of Medicine

EMF-093	Mechanisms	The effects of radiofrequency electromagnetic field exposure on biomarkers of oxidative stress in vivo and in vitro: A systematic review of experimental studies. 2024. DOI: 10.1016/j.envint.2024.108940. Website: PubMed, U.S. National Library of Medicine
EMF-094	Mechanisms	Stefania Romeo et al.. Genotoxicity of radiofrequency electromagnetic fields on mammalian cells in vitro: A systematic review with narrative synthesis. Environment International. 2024. DOI: 10.1016/j.envint.2024.109104. Website: PubMed, U.S. National Library of Medicine
EMF-095	Mechanisms	A scoping review and evidence map of radiofrequency field exposure and genotoxicity: assessing in vivo, in vitro, and epidemiological data. 2025. Website: PubMed, U.S. National Library of Medicine
EMF-096	Mechanisms	Elif Taspinar Simsek et al.. Experimental and clinical evidence on radiofrequency electromagnetic field effects on the blood-brain barrier: a scoping review. 2026. Website: PubMed, U.S. National Library of Medicine
EMF-097	Symptoms	The effects of radiofrequency electromagnetic fields exposure on human self-reported symptoms: A systematic review of human experimental studies. 2024. DOI: 10.1016/j.envint.2024.108612. Website: PubMed, U.S. National Library of Medicine
EMF-098	Symptoms	Electromagnetic hypersensitivity: a systematic review of provocation studies. 2005. Website: PubMed, U.S. National Library of Medicine
EMF-099	Symptoms	Idiopathic environmental intolerance attributed to electromagnetic fields (formerly 'electromagnetic hypersensitivity'): An updated systematic review of provocation studies. 2010. Website: PubMed, U.S. National Library of Medicine

EMF-100	Symptoms	G James Rubin et al.. Do people with idiopathic environmental intolerance attributed to electromagnetic fields display physiological effects when exposed to electromagnetic fields? A systematic review of provocation studies. Bioelectromagnetics. 2011. DOI: 10.1002/bem.20690. Website: PubMed, U.S. National Library of Medicine
EMF-101	Symptoms	The effects of radiofrequency electromagnetic fields exposure on tinnitus, migraine and non-specific symptoms in the general and working population: A systematic review and meta-analysis on human observational studies. 2024. Website: PubMed, U.S. National Library of Medicine
EMF-102	Cognition	Blanka Pophof et al.. The effect of exposure to radiofrequency electromagnetic fields on cognitive performance in human experimental studies: Systematic review and meta-analyses. Environment International. 2024. DOI: 10.1016/j.envint.2024.108899. Website: PubMed, U.S. National Library of Medicine
EMF-103	Cognition	The effects of radiofrequency exposure on cognition: A systematic review and meta-analysis of human observational studies. 2024. Website: PubMed, U.S. National Library of Medicine
EMF-104	Symptoms	Headache in the international cohort study of mobile phone use and health (COSMOS) in the Netherlands and the United Kingdom. 2024. Website: PubMed, U.S. National Library of Medicine
EMF-105	Clinical care	Radiation and health. 2005. Website: World Health Organization
EMF-106	Measurement	Measuring magnetic fields. Website: Australian Radiation Protection and Nuclear Safety Agency

EMF-107	Measurement	TR170 - Measurement of Extremely Low Frequency electric and Magnetic fields Associated with Electricity Supply and Distribution Infrastructure. Website: Australian Radiation Protection and Nuclear Safety Agency
EMF-108	Measurement	Powerlines. Website: Australian Radiation Protection and Nuclear Safety Agency
EMF-109	Measurement	Electricity and health. Website: Australian Radiation Protection and Nuclear Safety Agency
EMF-110	Measurement	Extremely low frequency electric and magnetic fields. Website: Australian Radiation Protection and Nuclear Safety Agency
EMF-111	Measurement	Measurement studies of personal exposure to radiofrequency electromagnetic fields: A systematic review. 2023. Website: PubMed, U.S. National Library of Medicine
EMF-112	Measurement	Lessons learnt on biases and uncertainties in personal exposure measurement surveys of radiofrequency electromagnetic fields with exposimeters. 2016. Website: PubMed, U.S. National Library of Medicine
EMF-113	Measurement	Instruments to assess and measure personal and environmental radiofrequency-electromagnetic field exposures. 2016. Website: PubMed, U.S. National Library of Medicine
EMF-114	Measurement	Instruments to measure environmental and personal radiofrequency-electromagnetic field exposures: an update. 2022. Website: PubMed, U.S. National Library of Medicine
EMF-115	Occupational	Occupational exposure to radiofrequency electromagnetic fields. 2022. Website: PubMed, U.S. National Library of Medicine

EMF-116	Medical devices	Potential Cell Phone Interference with Pacemakers and Other Medical Devices. Website: U.S. Food and Drug Administration
EMF-117	Medical devices	Magnets in Cell Phones and Smart Watches May Affect Pacemakers and Other Implanted Medical Devices. Website: U.S. Food and Drug Administration
EMF-118	Medical devices	Wireless Medical Devices. Website: U.S. Food and Drug Administration
EMF-119	Emerging technology	Karipidis K, Mate R, Urban D, Tinker R, Wood A. 5G mobile networks and health-a state-of-the-science review of the research into low-level RF fields above 6 GHz. Journal of Exposure Science & Environmental Epidemiology. 2021. DOI: 10.1038/s41370-021-00297-6. Website: PubMed, U.S. National Library of Medicine
EMF-120	Emerging technology	Meta-analysis of in vitro and in vivo studies of the biological effects of low-level millimetre waves. 2021. Website: PubMed, U.S. National Library of Medicine
EMF-121	Emerging technology	5G Wireless Communication and Health Effects-A Pragmatic Review Based on Available Studies Regarding 6 to 100 GHz. 2019. Website: PubMed, U.S. National Library of Medicine
EMF-122	Environment	Thill A, Cammaerts MC, Balmori A. Biological effects of electromagnetic fields on insects: a systematic review and meta-analysis. Reviews on Environmental Health. 2024. DOI: 10.1515/reveh-2023-0072. Website: PubMed, U.S. National Library of Medicine
EMF-123	Environment	Ken Karipidis et al.. What evidence exists on the impact of anthropogenic radiofrequency electromagnetic fields on animals and plants in the environment: a systematic map. Environmental Evidence. 2023. DOI: 10.1186/s13750-023-00304-3. Website: PubMed, U.S. National Library of Medicine

EMF-124	Environment	Engels S, Schneider NL, Lefeldt N et al.. Anthropogenic electromagnetic noise disrupts magnetic compass orientation in a migratory bird. Nature. 2014. DOI: 10.1038/nature13290. Website: PubMed, U.S. National Library of Medicine
EMF-125	Environment	S Cucurachi et al.. A review of the ecological effects of radiofrequency electromagnetic fields (RF-EMF). Environ Int. 2013. DOI: 10.1016/j.envint.2012.10.009. Website: PubMed, U.S. National Library of Medicine
EMF-126	Environment	Plant Responses to High Frequency Electromagnetic Fields. 2016. Website: PubMed, U.S. National Library of Medicine
EMF-127	Environment	Biological Effects of Electric, Magnetic, and Electromagnetic Fields from 0 to 100 MHz on Fauna and Flora: Workshop Report. 2022. Website: PubMed, U.S. National Library of Medicine
EMF-128	Methods	WHO research agenda for radiofrequency fields. 2010. Website: World Health Organization
EMF-129	Methods	2007 WHO Research Agenda for Extremely Low Frequency Fields. 2007. Website: World Health Organization
EMF-130	Methods	OHAT Risk of Bias Tool. Website: National Toxicology Program
EMF-131	Methods	The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. 2021. Website: PubMed, U.S. National Library of Medicine
EMF-132	Scientific debate	Association between magnetic field exposure and miscarriage risk is not supported by the data. 2021. Website: PubMed, U.S. National Library of Medicine

EMF-133	Standards	47 CFR 1.1310 Radiofrequency radiation exposure limits. Website: Electronic Code of Federal Regulations
EMF-134	Infrastructure	Portillo F, Fernandez-Ros M, Novas N, Garcia RM, Viciano E, Gazquez JA. Monitoring Harmonic ELF Magnetic Fields in Data Centers With Sensor-Based Instrumentation. IEEE Transactions on Instrumentation and Measurement. 2026. DOI: 10.1109/TIM.2026.3684676. Website: IEEE Xplore
EMF-135	Infrastructure	Sutaria J, Rönnerberg SK. Propagation of supraharmonics in a data center with different operating modes of UPS. IEEE Access. 2023. DOI: 10.1109/ACCESS.2023.3266092. Website: Luleå University of Technology repository
EMF-136	Measurement	Alfalahi STY et al.. Supraharmonics in Power Grid: Identification, Standards, and Measurement Techniques. IEEE Access. 2021. DOI: 10.1109/ACCESS.2021.3099013. Website: Universiti Tenaga Nasional repository
EMF-137	Intermediate frequency	Lambert Bodewein, Kristina Schmiedchen, Dagmar Dechent, Dominik Stunder, David Graefrath, Lukas Winter, Thomas Kraus, Sarah Driessen. Systematic review on the biological effects of electric, magnetic and electromagnetic fields in the intermediate frequency range (300 Hz to 1 MHz). Environmental Research. 2019. DOI: 10.1016/j.envres.2019.01.015. Website: PubMed, U.S. National Library of Medicine
EMF-138	Cardiovascular	Michelant L, Selmaoui B. Impact of Radiofrequency Electromagnetic Fields on Cardiac Activity at Rest: A Systematic Review of Healthy Human Studies. Bioelectromagnetics. 2025. DOI: 10.1002/bem.70014. Website: PubMed, U.S. National Library of Medicine

EMF-139	Sleep and EEG	Anna C Prins, Koen Baas, Johan N van der Meer, Marc Jacobs, Aart J Nederveen. The effect of mobile phone electromagnetic fields on the human resting state wake EEG and event-related potential: A systematic review and meta-analysis. Bioelectromagnetics. 2025. DOI: 10.1002/bem.22531. Website: PubMed, U.S. National Library of Medicine
EMF-140	Sleep and EEG	An experimental study on effects of radiofrequency electromagnetic fields on sleep in healthy elderly males and females: Gender matters!. 2020. Website: PubMed, U.S. National Library of Medicine
EMF-141	Sleep and EEG	RF-EMF exposure effects on sleep - Age doesn't matter in men!. 2020. DOI: 10.1016/j.envres.2020.110173. Website: PubMed, U.S. National Library of Medicine
EMF-142	Sleep and EEG	The potential for impact of man-made super low and extremely low frequency electromagnetic fields on sleep. Sleep Medicine Reviews. 2019. Website: PubMed, U.S. National Library of Medicine
EMF-143	Sleep and EEG	Danker-Hopfe et al.. Effects of RF-EMF on the Human Resting-State EEG-the Inconsistencies in the Consistency. Part 1: Non-Exposure-Related Limitations of Comparability Between Studies. Bioelectromagnetics. 2019. DOI: 10.1002/bem.22194. Website: PubMed, U.S. National Library of Medicine
EMF-144	Medical devices	Driessen S, Napp A, Schmiedchen K, Kraus T, Stunder D. Electromagnetic interference in cardiac electronic implants caused by novel electrical appliances emitting electromagnetic fields in the intermediate frequency range: a systematic review. EP Europace. 2019. DOI: 10.1093/europace/euy155. Website: PubMed Central, U.S. National Library of Medicine

EMF-145	Static fields	Driessen S et al.. Biological and health-related effects of weak static magnetic fields (≤ 1 mT) in humans and vertebrates: A systematic review. PLOS ONE. 2020. DOI: 10.1371/journal.pone.0230038. Website: PubMed, U.S. National Library of Medicine
EMF-146	Static fields	Effects of static magnetic fields on cognition, vital signs, and sensory perception: a meta-analysis. 2011. Website: PubMed, U.S. National Library of Medicine
EMF-147	Immune effects	Immunotoxicity of radiofrequency radiation. Environmental Pollution. 2022. DOI: 10.1016/j.envpol.2022.119793. Website: PubMed, U.S. National Library of Medicine
EMF-148	Immune effects	Biological Effects of High-Frequency Electromagnetic Fields on CNS Function and Neuroimmune Responses: A Systematic Review of In Vitro and In Vivo Experimental Studies. 2026. Website: PubMed, U.S. National Library of Medicine
EMF-149	Cardiovascular	Impacts of Geomagnetic and Man-Made Electromagnetic Fields on Heart Rate and Its Variability in Healthy Adults: A Scoping Review. 2026. Website: PubMed, U.S. National Library of Medicine
EMF-150	Livestock and grounding	Meta-analysis of stray voltage on dairy cattle. Journal of Dairy Science. 2009. DOI: 10.3168/jds.2008-1979. Website: PubMed, U.S. National Library of Medicine
EMF-151	ELF health	Residential exposure to magnetic fields from transformer stations and risk of childhood leukemia. Environmental Research. 2024. Website: PubMed, U.S. National Library of Medicine

EMF-152	ELF health	Crespi CM, Sudan M, Juutilainen J et al.. International study of childhood leukemia in residences near electrical transformer rooms. Environmental Research. 2024. DOI: 10.1016/j.envres.2024.118459. Website: PubMed, U.S. National Library of Medicine
EMF-153	ELF health	Magnetic fields from indoor transformer stations and risk of cancer in adults: a cohort study. Occupational and Environmental Medicine. 2024. DOI: 10.1136/oemed-2024-109466. Website: PubMed, U.S. National Library of Medicine
EMF-154	Livestock and grounding	Monitoring and remediation of on-farm and off-farm ground current measured as step potential on a Wisconsin dairy farm: A case study. 2016. Website: PubMed, U.S. National Library of Medicine
EMF-155	Livestock and grounding	Stray voltage and milk quality: a review. 2012. Website: PubMed, U.S. National Library of Medicine
EMF-156	Agriculture	University of Minnesota Extension. R-EF-11: Stray Voltage Problems with Dairy Cows. Extension technical publication. Website: University of Minnesota Extension (Internet Archive copy)
EMF-162	Measurement	NIST. Methodology for Standard Electromagnetic Field Measurements. Technical measurement paper. Website: National Institute of Standards and Technology
EMF-163	Measurement	NIST. Electromagnetic Field Strength Metrology. Technical program. Website: National Institute of Standards and Technology
EMF-164	Scientific debate	The Systematic Review on RF-EMF Exposure and Cancer by Karipidis et al. (2024) has Serious Flaws that Undermine the Validity of the Study's Conclusions. Environment International. 2025. DOI: 10.1016/j.envint.2024.109200. Website: PubMed, U.S. National Library of Medicine

EMF-165	Scientific debate	Evidence on RF-EMF and cancer in animals misjudged: methodological and analytical flaws in the Mevissen et al. systematic review. Environment International. 2026. Website: PubMed, U.S. National Library of Medicine
EMF-166	Scientific debate	Response to the letter from Di Ciaula et al. Environment International. 2025. Website: PubMed, U.S. National Library of Medicine
EMF-167	Scientific debate	ICBE-EMF author group. The WHO-commissioned systematic reviews on health effects of radiofrequency radiation provide no assurance of safety. Environmental Health. 2025. DOI: 10.1186/s12940-025-01220-4. Website: PubMed, U.S. National Library of Medicine
EMF-168	ELF health	Amoon AT, Swanson J, Magnani C, Johansen C, Kheifets L. Pooled analysis of recent studies of magnetic fields and childhood leukemia. Environmental Research. 2022. DOI: 10.1016/j.envres.2021.111993. Website: PubMed, U.S. National Library of Medicine
EMF-169	Measurement	Fernandes Veludo A, Stroobandt B, van Bladel H et al.. Assessing radiofrequency electromagnetic field exposure in multiple microenvironments across ten European countries with a focus on 5G. Environment International. 2025. DOI: 10.1016/j.envint.2025.109540. Website: PubMed, U.S. National Library of Medicine
EMF-170	Measurement	A comprehensive review of 5G NR RF-EMF exposure assessment technologies: fundamentals, advancements, challenges, niches, and implications. 2024. Website: PubMed, U.S. National Library of Medicine
EMF-171	Consumer mitigation	Federal Trade Commission. FTC Offers Tips to Help Consumers Avoid Cell Phone Radiation Scams. Consumer guidance. 2011. Website: Federal Trade Commission

EMF-175	ELF health	Liimatainen A, Roivainen P, Juutilainen J, Höytö A, Naarala J. A Cohort Study on Alzheimer's Disease in Relation to Residential Magnetic Fields From Indoor Transformer Stations. Bioelectromagnetics. 2025. DOI: 10.1002/bem.70031. Website: PubMed Central, U.S. National Library of Medicine
EMF-178	Scientific debate	Schüz J, Pirie K, Reeves GK, Floud S, Beral V. Response to Moskowitz and Birnbaum, Taylor, Baldwin, et al. JNCI Journal of the National Cancer Institute. 2022. DOI: 10.1093/jnci/djac111. Website: PubMed Central, U.S. National Library of Medicine
EMF-179	Methods	Higgins JPT and ROBINS-E development team. ROBINS-E tool: risk of bias in non-randomized studies of exposures. Official ROBINS-E guidance. Website: Risk of Bias tools
EMF-180	Methods	NTP / NIEHS. OHAT Handbook for systematic review and evidence integration. OHAT Handbook. Website: National Toxicology Program
EMF-181	Methods	Cochrane Handbook authors. Cochrane Handbook Chapter 7: bias and conflicts of interest. Cochrane Handbook. Website: Cochrane
EMF-182	Methods	Cochrane Handbook authors. Cochrane Handbook Chapter 14: certainty of a body of evidence. Cochrane Handbook. Website: Cochrane
EMF-183	Legal	21 USC 360ii, 2024 edition. 2024. Website: GovInfo, U.S. Government Publishing Office
EMF-184	Legal	21 USC 360kk, 2024 edition. 2024. Website: GovInfo, U.S. Government Publishing Office
EMF-185	Medical devices	FDA EMC guidance, June 2022. 2022. Website: U.S. Food and Drug Administration
EMF-186	Medical devices	FDA EMC overview. Website: U.S. Food and Drug Administration

EMF-187	Animal cancer	NTP cell-phone RF research. Website: National Toxicology Program
EMF-188	Oversight	GAO-12-771. Website: U.S. Government Accountability Office
EMF-189	Medical devices	Medtronic InterStim safety information. Website: Medtronic
EMF-190	Surveillance	FDA MAUDE description and limitations. Website: U.S. Food and Drug Administration
EMF-191	Surveillance	FCC complaint questions and answers. Website: Federal Communications Commission
EMF-192	Infrastructure governance	Loudoun noise and air-quality concerns. Website: Loudoun County, Virginia
EMF-193	Infrastructure governance	Loudoun Data Center Standards and Locations. Website: Loudoun County, Virginia
EMF-194	Infrastructure governance	JLARC Data Centers in Virginia. Website: Virginia Joint Legislative Audit and Review Commission
EMF-195	Infrastructure governance	Oklahoma DEQ data-center guide. Website: State of Oklahoma
EMF-196	Rural infrastructure	OWRB water permit application guidance. Website: State of Oklahoma
EMF-197	Rural infrastructure	OWRB citizen complaints. Website: State of Oklahoma
EMF-198	Rural infrastructure	EPA private drinking-water wells. Website: U.S. Environmental Protection Agency

EMF-199	Research priorities	NIH highlighted topic, posted April 20, 2026. 2026. Website: National Institutes of Health
EMF-200	Measurement	Swiss FOEN measurement methods and results. Website: Swiss Federal Office for the Environment
EMF-201	Clinical care	Swiss FOEN electrosensitivity resource. Website: Swiss Federal Office for the Environment
EMF-202	Clinical care	MedNIS specialist consultation. Website: MedNIS
EMF-205	Clinical care	Forster et al.. Risks of electromagnetic fields from the perspective of general practitioners and pediatricians. BMC Primary Care 26, 62. 2025. DOI: 10.1186/s12875-025-02762-9. Website: Springer Nature
EMF-206	Clinical care	Swiss GP survey authors. Swiss GP survey, 2006, BMC Public Health. 2006. DOI: 10.1186/1471-2458-6-267. Website: Springer Nature
EMF-207	Clinical care	RIVM: GGD guideline on EMF and health, 2024. 2024. Website: Netherlands National Institute for Public Health and the Environment
EMF-208	Clinical care	French ministerial response, August 7, 2025. 2025. Website: French Senate
EMF-209	Clinical care	MedNIS annual report 2025. 2025. Website: Swiss Federal Office for the Environment
EMF-210	Occupational	HSE: Control of Electromagnetic Fields at Work Regulations. Website: UK Health and Safety Executive
EMF-211	Clinical care	ARPANSA: Electromagnetic hypersensitivity. Website: Australian Radiation Protection and Nuclear Safety Agency

EMF-212	Measurement access	India DoT: Tarang Sanchar. Website: India Department of Telecommunications
EMF-213	Clinical care	INRS, June 2024: clinical practice guidance summary. 2024. Website: French National Research and Safety Institute (INRS)
EMF-214	Measurement access	France Service Public: exposure measurement, April 13, 2026. 2026. Website: Service Public, French government
EMF-215	Measurement access	ANFR: atypical exposure locations. Website: French National Frequency Agency (ANFR)
EMF-216	Local government	ANFR: mayors' role. Website: French National Frequency Agency (ANFR)
EMF-217	Local government	ANFR: departmental and local consultation. Website: French National Frequency Agency (ANFR)
EMF-218	Infrastructure governance	European Commission: energy performance of data centres. Website: European Commission, Energy
EMF-219	Measurement	Baruah A et al.. Citizen science-based mapping of radiofrequency electromagnetic field exposure in Europe: A proof-of-concept validation study. Environmental Research 309 Pt 2, 125886. 2026. DOI: 10.1016/j.envres.2026.125886. Website: PubMed, U.S. National Library of Medicine
EMF-220	Measurement	Van Bladel H et al.. Temporal 2G–5G RF-EMF exposure assessment in ten European countries during one year. Science of the Total Environment 1047, 182037. 2026. DOI: 10.1016/j.scitotenv.2026.182037. Website: PubMed, U.S. National Library of Medicine
EMF-221	Innovation	ETAIN periodic reporting. Website: European Commission CORDIS

EMF-222	ELF health	European Commission SCHEER low-frequency factsheet. Website: European Commission, Public Health
EMF-223	Evidence governance	BAFU: BERENIS remit and selection criteria. Website: Swiss Federal Office for the Environment
EMF-224	Evidence governance	ARPANSA EME action plan 2025–2028. 2028. Website: Australian Radiation Protection and Nuclear Safety Agency
EMF-225	Evidence governance	European Ombudsman opening letter, October 14, 2025, case 1898/2025/MIK. 2025. Website: European Ombudsman
EMF-226	RF cancer	ANSES final opinion and report, October 2025, mirrored PDF. 2025. Website: Actu-Environnement (report mirror)
EMF-227	Scientific debate	Mevissen M et al.. Rationale for a narrative approach in assessing RF-EMF in animal cancer studies. 2026. DOI: 10.1016/j.envint.2026.110153. Website: ResearchGate (author-uploaded text)
EMF-228	Animal cancer	Imaida K et al.. The International Collaborative Animal Study of mobile phone radiofrequency radiation carcinogenicity and genotoxicity: the Japanese study. 2026. DOI: 10.1093/toxsci/kfag002. Website: Electronics and Telecommunications Research Institute repository
EMF-229	Animal cancer	Kim HS et al.. The International Collaborative Animal Study of the carcinogenicity and genotoxicity of mobile phone radiofrequency radiation: the Korean study. 2026. DOI: 10.1093/toxsci/kfag001. Website: PubMed Central, U.S. National Library of Medicine
EMF-230	Scientific debate	Melnick et al.. Conflicting views in experimental carcinogenesis: a commentary on design and methodological deficiencies in the follow-up validation studies on radiofrequency radiation. 2026. DOI: 10.1186/s12940-026-01324-5. Website: PubMed Central, U.S. National Library of Medicine

EMF-231	Mechanisms	NIEHS. NIEHS 2025 investigative report. 2025. DOI: 10.22427/NIEHS-RFR. Website: National Institute of Environmental Health Sciences
EMF-232	Research infrastructure	NIEHS exposure measurement strategic priority. 2025. Website: National Institute of Environmental Health Sciences
EMF-233	Clinical education	ATSDR Taking an Exposure History. 2026. Website: Agency for Toxic Substances and Disease Registry
EMF-234	Research infrastructure	NIEHS precision environmental health strategic priority. 2025. Website: National Institute of Environmental Health Sciences
EMF-235	Research infrastructure	NIEHS exposomics strategic priority. 2025. Website: National Institute of Environmental Health Sciences
EMF-236	Research infrastructure	Human exposome forum marks historic step forward. 2025. Website: National Institute of Environmental Health Sciences
EMF-237	Research infrastructure	NIEHS Exposure Science. Website: National Institute of Environmental Health Sciences
EMF-238	Energy innovation	Grid-Enhancing Technologies Improve Existing Power Lines. Website: U.S. Department of Energy
EMF-239	Energy innovation	Grid enhancing technologies from research and development to reality. Website: U.S. Department of Energy
EMF-240	Energy innovation	DOE study on maximizing existing transmission capabilities. Website: U.S. Department of Energy
EMF-241	Energy innovation	DOE Electric Grid Projects. Website: U.S. Department of Energy (Internet Archive copy)

EMF-242	ELF public information	Electric and Magnetic Fields from Power Lines. Website: U.S. Environmental Protection Agency
EMF-243	Scope	Radiation Basics. Website: U.S. Nuclear Regulatory Commission (Internet Archive copy)
EMF-247	Research ethics	HHS Belmont Report. 1979. Website: U.S. Department of Health and Human Services
EMF-248	Surveillance	CDC ATSDR Guidelines for Examining Unusual Patterns of Cancer and Environmental Concerns. Website: Centers for Disease Control and Prevention

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Document type	Key finding or purpose
Notice	HHS seeks evidence, exposure methods, sensitive-population needs, environmental evidence and research priorities.
Notice	2026 FCC refresh concerns the specified remand record; comments close October 22.
Court opinion	2021 remand required better explanation of FCC conclusions on specified non-cancer and related issues.
Statute	Preserves local wireless siting authority subject to federal limitations, including compliant RF environmental-effects restriction.
Regulation	Sets RF exposure evaluation and exemption provisions within FCC environmental review.
Statute	Section 302a addresses device interference and reception standards.
Regulation	Part 15 governs radiofrequency devices and interference conditions.
Regulation	OSHA nonionizing-radiation provision addresses occupational exposure.

Agency guidance	OSHA summarizes RF and microwave occupational safety resources.
Agency guidance	Identifies occupational RF hazard locations and protective measures.
Agency guidance	Discusses health effects relevant to RF and microwave occupational exposures.
Agency guidance	Provides routes for evaluating RF exposure.
Guideline	ICNIRP 2020 guidelines cover 100 kHz to 300 GHz and distinguish exposure conditions.
Guideline	ICNIRP 2010 guidelines cover 1 Hz to 100 kHz electric and magnetic fields.
Technical guidance	FCC KDB 447498 supplies device RF exposure evaluation guidance.
Agency guidance	FCC RF safety page is a gateway to exposure rules and technical resources.
Guideline	Safety Code 6 provides human exposure limits over 3 kHz to 300 GHz.
Technical guidance	Health Canada technical guide supports Safety Code 6 exposure assessment.

Agency guidance	Explains Safety Code 6 and localized-exposure supplement above 6 GHz.
Technical template	ISED template structures uncontrolled-environment RF compliance evaluations.
Consultation summary	Summarizes feedback on the 2015 Safety Code 6 revisions.
Scientific assessment	SCHEER page discusses evidence review and technical updates to dosimetric limits.
Agency synthesis	NCI summarizes human epidemiology, animal findings and cell-phone cancer research.
Agency synthesis	NCI distinguishes power-frequency and radiofrequency evidence.
Agency guidance	FDA describes shared cell-phone responsibilities and continued scientific monitoring.
Agency literature review	Cancer review covers 100 kHz–6 GHz, main searches through 2018 with relevant updates through August 2019.
Agency guidance	CDC presents basic cell-phone exposure and health information.
Agency synthesis	NIEHS explains electric and magnetic fields and the health research context.
Agency technical booklet	NIEHS booklet explains fields associated with electric power and research questions.

Agency guidance	WHO Q&A explains EMF exposures and the limits of existing evidence.
Scientific monograph	WHO EHC 238 synthesizes extremely-low-frequency health evidence and research needs.
Hazard monograph	IARC Volume 80 evaluates static and ELF electric and magnetic fields.
Hazard monograph	IARC Volume 102 evaluates RF carcinogenic hazard, including epidemiological and experimental evidence.
Systematic review	2024 human-cancer review included 63 articles. Phone use was not associated with increased glioma, meningioma or acoustic-neuroma risk in the principal pooled comparisons.
Systematic review	26 articles; pooled mobile-phone comparisons did not show increased leukemia, non-Hodgkin lymphoma or thyroid cancer. Authors rated phone evidence low certainty and occupational evidence very low certainty.
Prospective cohort	COSMOS found no increased risk of three studied brain tumors with cumulative call time in 264,574 adults.

Prospective cohort	UK Million Women Study updates prospective cell-phone and brain-tumor evidence.
Case-control	INTERPHONE found no overall increased glioma or meningioma risk, with a signal in the heaviest-use category.
Case-control	INTERPHONE acoustic-neuroma analysis evaluates duration and cumulative call-time categories.
Dose-based case-control	Uses estimated absorbed RF dose at tumor location in five INTERPHONE countries.
Dosimetry methods	Develops estimated RF energy absorption for INTERPHONE analyses.
Case-control synthesis	Swedish research reports elevated estimates in some long-term and ipsilateral phone-use categories.
Case-control	Evaluates malignant brain tumors using deceased cases and controls.
Critique	Published critique challenges the COSMOS methodology.

Author response	2024 response addresses a letter concerning COSMOS.
Author response	Second 2024 response concerns COSMOS interpretation or methodology.
Correspondence	Letter concerns interpretation of the UK Million Women Study update.
Correspondence	Additional correspondence on the UK Million Women Study.
Case-control	MOBI-Kids recruited 899 brain-tumor cases aged 10–24 and 1910 appendicitis controls in 14 countries. Authors found no evidence of a causal association; downward odds trends were not interpreted as protection.
Case-control	CEFALO evaluates mobile-phone use in children and adolescents.
Critique	Published analysis challenges aspects of the MOBI-Kids design and interpretation.

Case-control	Korean and Japanese MOBI-Kids analysis examines brain tumors and RF exposure.
Dosimetry methods	Estimates RF and ELF dose by brain location in MOBI-Kids.
Bias analysis	CEFALO methodological analysis assesses random and systematic reporting errors and selection bias.
Study protocol	MOBI-Kids protocol documents planned study and exposure methods.
Prospective cohort	Swiss adolescent cohort reported lower figural-memory scores with estimated brain RF dose; whole-sample interval included zero, while right-side-user and operator-data subgroup intervals did not.
Prospective cohort	Earlier adolescent cohort relates memory performance and wireless communication exposure.
Chronic bioassay	NTP TR-595 found carcinogenic evidence for heart schwannomas in male rats under its whole-body RF exposure conditions.

Chronic bioassay	NTP TR-596 reports the parallel 1,900 MHz mouse experiments.
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Chronic bioassay	Ramazzini lifetime rat study found increased heart schwannomas in males at the highest tested field.
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Systematic review	2025 review rated evidence for male-rat glioma and heart schwannoma highly; many other outcomes had little evidence.
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Correction	Corrected animal synthesis retains high-certainty male-rat glioma and heart-schwannoma judgments; updates counting and numerical details.
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Reanalysis commentary	Quantitative reassessment assigns moderate heart and low brain cancer certainty.
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Author response	Published author response defends the animal-cancer review's methods.
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Systematic review	Pinto review examines in-vivo RF cancer evidence using different synthesis decisions.
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Systematic review	Review addresses RF with other carcinogenic exposures in animal models.
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Review protocol	Protocol describes planned eligibility and synthesis for the animal-cancer review.
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Agency critique	ARPANSA challenges the 2025 animal review's synthesis and certainty decisions.
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Agency assessment	German BfS spotlight reviews the 2025 animal-cancer systematic review.
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Agency assessment	BfS spotlight evaluates the Pinto animal-cancer review.
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Agency assessment	BfS spotlight examines the 2024 human cancer systematic review.
Critical review	ICBE-EMF authors challenge scientific assumptions behind FCC and ICNIRP exposure limits.
Pooled analysis	Foundational pooled analysis examines residential magnetic fields and childhood leukemia.
Pooled analysis	2010 individual-data pooled analysis of seven studies found increasing point estimates with higher residential magnetic fields, but intervals included no association.
Pooled analysis	Greenland pooled analysis evaluates fields, wire codes and childhood leukemia.
Pooled analysis	Pooled analysis evaluates ELF magnetic fields and childhood brain tumors.
Exposure-response analysis	Explores how childhood-leukemia estimates vary with magnetic field exposure.
Epidemiological analysis	Examines childhood leukemia, fields and temporal patterns.

Policy analysis	Discusses precaution in response to possible childhood-leukemia risk.
Systematic review	Recent systematic review covers ELF magnetic fields, animal cancer and DNA damage.
Systematic review	Twenty-study meta-analysis found modestly elevated occupational ALS risk associated with higher ELF magnetic-field exposure. Estimates varied by occupational/exposure-history definition.
Systematic review	2020 meta-analysis examines both occupational ELF fields and electric shocks.
Systematic review	Meta-analysis evaluates occupational ELF exposure and Alzheimer disease.
Methods review	Reviews future needs in occupational ELF epidemiology.
Prospective cohort	913-woman cohort reported higher miscarriage risk with higher magnetic-field exposure.

Prospective cohort	Earlier prospective cohort examines personal magnetic fields and miscarriage.
Systematic review	2024 human male-fertility review included nine studies and found very uncertain evidence for most sperm outcomes.
Systematic review	117 animal papers and 10 human-sperm in-vitro papers. Authors rated reduced pregnancy rate moderate certainty and reduced sperm count low certainty; most other endpoints very low certainty.
Systematic review	The human observational review describes very uncertain evidence for adverse pregnancy outcomes. Pooled miscarriage, preterm-birth and low-birth-weight intervals all include no association.
Systematic review	Review assesses RF exposure in utero and pregnancy or birth outcomes in non-human mammals.
Systematic review	Additional review evaluates non-ionizing radiation and male fertility.

Systematic review	Review of 56 experimental studies rates oxidative-stress evidence very low certainty.
Systematic review	159-article review found most experiments did not detect genotoxic effects; positive-study evidence was less reliable.
Evidence map	2025 scoping review maps heterogeneous in-vivo, in-vitro and human genotoxicity studies.
Scoping review	2026 review found mixed results and no established causal RF link to blood-brain-barrier disruption.
Systematic review	Experimental review found no or small nonsignificant acute symptom effects below regulatory limits; certainty varied across comparisons. Participants did not identify exposure better than chance.
Systematic review	2005 review evaluates whether reported EMF sensitivity tracks blinded exposures.
Systematic review	Updated review assesses idiopathic environmental intolerance attributed to EMF.

Systematic review	Review examines physiological effects in people reporting EMF intolerance.
Systematic review	Review evaluates tinnitus, migraine and nonspecific symptoms in public and working populations.
Systematic review	Human experimental cognition review reports high-to-low certainty, varying by comparison, that short-term RF exposure does not reduce performance. Uncertainty remains in 16 of 35 subdomains.
Systematic review	2024 review synthesizes cognition outcomes in human observational studies.
Prospective cohort	COSMOS analysis examines mobile-phone use and headache prospectively.
Agency guidance	Historical WHO advice recognizes disabling symptoms and recommends clinical and environmental evaluation without established EMF causation.
Technical guidance	ARPANSA explains magnetic field measurement and interpretation.

Technical report	ARPANSA TR170 measures fields associated with electricity supply and distribution.
Agency guidance	ARPANSA explains power-line fields and health evidence.
Agency guidance	Explains fields from electricity and source-specific exposure context.
Agency guidance	Defines low-frequency electric and magnetic fields and effects.
Systematic review	Review surveys measured personal RF exposures across settings.
Methods review	Reviews bias and uncertainty in personal RF exposimeter surveys.
Instrument review	Reviews instruments for personal and environmental RF exposure assessment.
Instrument review	2022 review updates RF environmental and personal measurement instruments.
Exposure review	Reviews occupational RF exposure scenarios.

Agency guidance	FDA discusses potential phone interference with implanted medical devices.
Agency guidance	Strong magnets in consumer electronics can interfere with certain implanted devices.
Agency guidance	FDA addresses wireless coexistence, quality of service, interference and risk management.
Scientific review	Review of low-level fields above 6 GHz included 107 experimental and 31 radar epidemiology studies. Authors reported no confirmed evidence of human hazard from the studied low-level exposures.
Meta-analysis	2021 analysis synthesizes biological experiments at low-level millimeter-wave exposure.
Scientific review	2019 pragmatic review examines studies in the 6–100 GHz range.
Systematic review	Review authors interpret insect laboratory effects as established and advocate greater precaution. They acknowledge that field evidence is partial and wider ecological implications remain unknown.
Evidence map	Environmental RF evidence map includes 334 articles: 237 fauna and 97 flora. Most were laboratory studies; authors described widespread weak methods and limited natural-environment evidence.

Blinded experiment	Double-blind European-robin experiments found magnetic compass orientation disrupted by urban electromagnetic noise and restored by grounded screening.
Systematic review	Older review reports effects in many studies but no clear dose-response and limited field evidence.
Scientific review	Review covers plant responses to high-frequency electromagnetic fields.
Workshop report	Workshop considers fauna and flora effects from fields up to 100 MHz.
Research agenda	WHO research agenda identifies RF evidence gaps and study priorities.
Research agenda	WHO 2007 agenda addresses unresolved ELF questions.
Appraisal tool	NTP OHAT tool provides a structured approach to assessing evidence quality.
Reporting guideline	PRISMA 2020 defines reporting requirements for systematic reviews.
Methodological critique	Published 2021 critique challenges the interpretation of the magnetic-field and miscarriage cohort.

Regulation	Specifies applicable RF exposure limits and evaluation criteria.
Field measurement	One-month interior data-center magnetometry study reported typical rms magnetic flux density around 0.5 μ T, maximum below 1 μ T and substantial harmonic distortion.
Field / engineering study	Engineering paper describes measured and modeled changes in supraharmmonic magnitude and propagation when UPS operating mode changes.
Engineering review	Reviews supraharmmonic identification, standards and measurement methods in electrical grids.
Systematic review	Review of 56 studies found heterogeneous and inconsistent results, with inadequate evidence for conclusions on most endpoints.
Systematic review	Review of 28 healthy-human studies found mostly no heart-rate effects at rest; HRV findings were heterogeneous, with some position-dependent variations.

Systematic review	51-study EEG review found an effect for a 2G eyes-open resting protocol, but no evidence of effects during task performance. Most comparisons could not be synthesized because of heterogeneity.
Controlled experiment	Investigates RF exposure and sleep in healthy elderly men and women.
Randomized crossover analysis	Analysis of three blinded crossover studies found sporadic sleep effects and no indication of adverse health effects under the studied conditions.
Scientific review	Reviews potential effects of low-frequency fields on sleep.
Methods review	Analyzes methodological variation that can explain inconsistent EEG findings.
Systematic review	Review finds cardiovascular implants can malfunction in intermediate-frequency fields; likelihood depends on field parameters, device model, sensitivity, lead configuration and implantation geometry.

Systematic review	Weak-static-field review found inadequate evidence for firm conclusions on most endpoints.
Meta-analysis	Evaluates static-field effects on cognition, vital signs and perception.
Narrative review	Narrative immune review discusses possible shifts in immune-cell activity, number and function, but acknowledges contradictory findings and lack of satisfactory agreement.
Systematic review	2026 review covers CNS function and neuroimmune responses in cell and animal experiments.
Scoping review	2026 scoping review considers geomagnetic and man-made fields and adult HRV.
Meta-analysis	Dairy-cattle contact-current synthesis reports first statistically significant behavioral response at 3 mA and weighted mean first-response threshold of 4 mA.
Case-control	2024 study examines childhood leukemia relative to transformer-station distance.

Multi-country case-control	Five-country registry study found weak evidence of elevated childhood leukemia risk near built-in transformer rooms; conditional-model high-exposure estimate was 1.1 with a wide interval.
Prospective cohort	2024 cohort examines adult cancer in buildings with indoor transformer stations.
Case study	Case study documents monitoring and remediation of farm ground current measured as step potential.
Scientific review	Reviews stray voltage and milk quality.
Extension technical guide	Historical guide explains on- and off-farm conductive pathways in stray-voltage investigations.
Metrology methods	NIST methodology addresses standard electromagnetic-field measurements and error sources.
Agency technical program	NIST field-strength metrology describes capabilities for calibrated electromagnetic measurements.
Published critique	Critique disputes study selection, bias assessment and conclusions of the 2024 human-cancer review.

Published critique	2026 critique challenges methodological and analytical decisions in the Mevissen animal review.
Author response	Response addresses criticism of the Karipidis human-cancer review.
Critical review	2025 ICBE-EMF commentary challenges multiple WHO-commissioned reviews and their methods.
Pooled analysis	2022 pooled analysis reports no increased childhood leukemia risk at $\geq 0.4 \mu\text{T}$ versus $< 0.1 \mu\text{T}$; its estimate differs from earlier pooled analyses.
Multi-country exposure survey	Ten-country measurements found lower environmental village RF but higher maximum-upload handset contributions than cities; precautionary-limit countries showed lower environmental and higher uplink readings.
Technical review	Reviews RF-EMF exposure-assessment technology for 5G New Radio.
Agency consumer guidance	FTC guidance cautions against unsupported cell-phone radiation protection products.

Prospective cohort	2025 transformer-residence cohort did not find an association between residential fields and Alzheimer's disease.
Author response	Authors defend the null cohort finding, dispute high attrition and acknowledge few heavy users. This response addresses critiques rather than adding an independent population.
Appraisal tool	Official ROBINS-E guidance specifies causal-effect assessment and bias domains for non-randomized follow-up exposure studies.
Methods handbook	OHAT handbook describes systematic evaluation and integration of environmental-health evidence.
Methods guidance	Methods guidance distinguishes bias assessment, missing-results bias and conflicts of interest.
Methods guidance	GRADE guidance addresses certainty for outcome-specific bodies of evidence.
Government / institutional document	Electronic-product radiation program includes research, exposure evaluation, reduction techniques, liaison and dissemination.
Government / institutional document	Provides a process for electronic-product radiation performance standards.
Government / institutional document	2022 EMC guidance addresses intended environments, implant standards, configurations, labeling and functional criteria.
Government / institutional document	Describes existing FDA electromagnetic-compatibility functions.

Government / institutional document	Explains NTP cell-phone RF animal research, interpretation and limitations.
Government / institutional document	GAO 2012 recommended reassessing limits and likely-use testing; tracking labels recommendations closed not implemented.
Government / institutional document	InterStim manufacturer warnings identify interactions with cardiac devices and specified equipment; manuals govern details
Government / institutional document	MAUDE captures device-event reports and can support signal detection.
Government / institutional document	FCC provides a general complaint intake and referral process.
Government / institutional document	County documents tonal-noise complaints, investigations and limits in provisions specific to tonal or low-frequency noise.
Government / institutional document	Loudoun records evolving data-center standards including March 2025 special-exception changes.
Government / institutional document	Virginia legislative audit describes economic benefits, infrastructure pressures and residential concerns.
Government / institutional document	DEQ identifies air and discharge permitting and separates water quantity, rates, siting and noise responsibilities.
Government / institutional document	OWRB explains permitting for non-domestic water use.
Government / institutional document	OWRB offers a complaint pathway for specified water-use violations.
Government / institutional document	Private domestic wells are outside federal Safe Drinking Water Act public-system regulation.

Government / institutional document	NIH posted a highlighted research topic concerning RF/EMF health evidence in April 2026.
Government / institutional document	Swiss program uses mobile, residential and fixed-location environmental measurements.
Government / institutional document	Swiss government describes electrosensitivity concerns and commissioned consultation-network activity
Government / institutional document	MedNIS describes specialist consultation access.
Peer-reviewed study	German mixed-methods study documents variation in risk views and self-reported EMF information needs among clinicians.
Peer-reviewed study	Historical Swiss GP survey documents consultations and variation in approaches.
Government / institutional document	Dutch guideline supports clinical evaluation, communication and discussion of inexpensive feasible adjustments with uncertain health benefit.
Government / institutional document	French ministerial answer confirms commissioned clinical guidance and occupational/environmental referral centers
Government / institutional document	2025 MedNIS report documents clinical activity, cohort recruitment, physician workload difficulties and incomplete follow-up evaluation.
Government / institutional document	UK workplace framework requires exposure assessment and attention to workers at particular risk including implants.
Government / institutional document	Australian advice recognizes symptoms while stating no established evidence that EMF causes them.

Government / institutional document	Official Indian listing links an EMF information and measurement-request service.
Government / institutional document	Professional summary describes French clinical guidance, expert-agreement level and practical adjustments.
Government / institutional document	French process allows free eligible measurement requests, accredited independent testing and communication of results
Government / institutional document	France identifies atypical RF locations for attention and feasible engineering response; attention threshold changed January 2026.
Government / institutional document	French mayors have defined information, simulation, measurement and mediation functions.
Government / institutional document	French departmental and local consultation structures provide mediation arrangements.
Government / institutional document	EU describes data-center energy-performance reporting and aggregate disclosure.
Peer-reviewed study	Two-city proof of concept validates calibrated smartphone-derived RF maps with differing correlations across cities.
Peer-reviewed study	Twenty sensors across ten countries over 17 months demonstrate temporal RF-monitoring feasibility.
Government / institutional document	ETAIN reports mapping, dosimetry, exposure-reduction engineering and biological work at varying completion stages

Government / institutional document	SCHEER low-frequency summary describes an inconclusive childhood-leukemia signal and <u>exposure/environmental research gaps</u> .
Government / institutional document	BERENIS publishes selection criteria and quarterly selective scientific appraisals.
Government / institutional document	Australian 2025–2028 plan specifies exposure studies, research, standards, communication and performance reporting.
Government / institutional document	Official opening letter records an inquiry about SCHEER evidence handling and working-group composition.
Government / institutional document	ANSES integrated assessment could not establish presence or absence of a human carcinogenic effect and documented differing expert judgment.
Commentary	Authors defend narrative synthesis on heterogeneity grounds and explain methodological choices.
Peer-reviewed study	Japanese two-year male-rat study found no significant cancer increase under a single-dose protocol.
Peer-reviewed study	Korean study found no significant cancer increase under its single-dose protocol; exposed heart schwannomas were 2/70 versus 0 in each control group.
Commentary	Commentary argues that lower dose and fewer animals reduce sensitivity of follow-up bioassays.

Government / institutional document	Short investigative animal report found no comet-assay DNA damage after five-day exposures.
Government / institutional resource	Improved exposure measurement and deriving actionable meaning are existing NIEHS priorities.
Government / institutional resource	Provides a clinical exposure-history framework and referral resources that can be adapted to a defined concern.
Government / institutional resource	Describes integration of environmental and biomedical evidence.
Government / institutional resource	Defines a broad environmental-exposure research framework.
Government / institutional resource	NIH-supported coordination and international harmonization provide existing capacity for exposure research.
Government / institutional resource	Describes exposure science and measurement tools.
Government / institutional resource	DOE describes technologies that improve use of existing grid infrastructure.
Government / institutional resource	Describes engineering alternatives and grid-capacity implementation.
Government / institutional resource	Identifies research on use of existing transmission assets.
Government / institutional resource	Official project information on grid infrastructure investment.

Government / institutional resource	Explains power-line electric and magnetic fields and relevant exposure context.
Government / institutional resource	Explains radiation categories relevant to separating ionizing hazards from this nonionizing RFI.
Government / institutional resource	Respect for persons, beneficence and justice support ethical research design.
Government / institutional resource	Existing guidance provides a route for evaluating unusual cancer patterns and environmental concerns.

Important limitation	Material reviewed
One response per entity; question numbers requested; deadline October 21, 2026.	Selected text
Narrower scope than HHS; not a general invitation for all new 2026 evidence; rules remain effective.	Selected text
Administrative adequacy finding, not a clinical finding that compliant RF causes disease.	Selected text
Do not extend this provision automatically to every component of a data center; current legal application requires counsel.	Selected text
Exemption eligibility and actual compliance require source-specific calculations.	Excerpt / metadata
Interference with electronics is not the same endpoint as human tissue injury.	Excerpt / metadata
A device authorization does not measure aggregate exposure at a particular residence.	Excerpt / metadata
Older language and frequency coverage must be read with current applicability and other standards.	Excerpt / metadata

High-power worksite hazards cannot be generalized to ordinary community exposure.	Excerpt / metadata
Requires specific equipment, access and operating conditions.	Excerpt / metadata
Do not transfer high-intensity effects to measured low-intensity exposure without evidence.	Excerpt / metadata
Instrument selection, near-field conditions and frequency response affect results.	Excerpt / metadata
Guidelines are not automatically law in Oklahoma and are debated in parts of the literature.	Excerpt / metadata
Acute-effect limits are not epidemiological childhood-leukemia thresholds.	Excerpt / metadata
Version-specific guidance and product configuration matter.	Excerpt / metadata
A summary page cannot replace applicable rule text or a site assessment. Access is through an archived page.	Excerpt / metadata
Canadian limits do not establish U.S. legal compliance.	Excerpt / metadata
Technical methods need qualified application and calibrated instruments.	Excerpt / metadata

Compare frequency, dose, averaging, population and legal scope; foreign guideline is not U.S. law.	Selected text
Template completion is not independent proof of accurate input data.	Excerpt / metadata
Comments and agency responses differ from new experimental evidence.	Excerpt / metadata
Page labels refer to preliminary material; verify the linked final document before legal quotation.	Selected text
Consumer overview is not an individual risk estimate or site-specific proof.	Selected text
Hazard classifications and measured exposure must be considered separately.	Selected text
A public landing page is not a complete endpoint-specific review or evidence that internal monitoring ceased.	Selected text
113-page report examined selectively; cannot alone resolve later literature, higher frequencies or non-cancer outcomes.	Selected text
A public fact page is not a systematic synthesis of every endpoint.	Excerpt / metadata
General descriptions do not establish exposure near a proposed facility.	Excerpt / metadata
Historical booklet needs current standards and newer evidence alongside it.	Excerpt / metadata

Page predates several recent reviews and should not be called a new WHO assessment.	Excerpt / metadata
Published in 2007; later studies and current standards need separate review.	Excerpt / metadata
Group 2B for ELF magnetic fields is a hazard category, not a property-specific risk prediction.	Excerpt / metadata
2013 publication reflects a 2011 evaluation; it is not a 2026 quantitative assessment.	Excerpt / metadata
Exposure misclassification, latency, selection, and endpoint-specific certainty remain important. Read the new critique and author response indexed here.	Abstract
Few studies and weak exposure characterization, especially occupationally. Fixed-transmitter evidence and dose-response data were insufficient. Findings do not establish absence of all RF cancer risks.	Abstract
Median prospective follow-up 7.12 years; rare outcomes and exposure error limit precision; prior-use duration is not follow-up duration.	Selected text

Female cohort and exposure self-report restrict generalization; full results were not extracted.	Limited review
Recall, selection and implausible reported usage prevent a straightforward causal reading of the highest category.	Abstract
High-exposure subgroups and retrospective exposure need careful interpretation.	Excerpt / metadata
Model assumptions and retrospective usage still affect dose estimates.	Excerpt / metadata
Estimated dose is not directly measured historical tissue dose.	Excerpt / metadata
Retrospective reporting, selection and subgroup analyses must be assessed against cohort evidence.	Excerpt / metadata
Proxy exposure reports and control selection can introduce additional bias.	Excerpt / metadata
Critique is not a new independent cohort; full text is needed to judge individual arguments.	Selected text

No independent replication; read the specific criticism and reply together.	Excerpt / metadata
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Do not count correspondence as a separate epidemiological population.	Excerpt / metadata
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Correspondence should not substitute for the cohort data.	Excerpt / metadata
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Full text needed to establish the argument; metadata alone cannot settle it.	Excerpt / metadata
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Differential proxy recall, prodromal changes in phone use and residual confounding limit interpretation. Small increased risk cannot be excluded.	Abstract
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Small exposed subgroups and long-latency disease constrain inference.	Excerpt / metadata
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It is a methodological argument, not a new case series.	Excerpt / metadata
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Overlap with the international study prevents treating both as independent evidence.	Excerpt / metadata
Modeled anatomy and device-use histories bring uncertainty.	Excerpt / metadata
Bias correction depends on assumptions and validation information.	Excerpt / metadata
Protocol is not an outcome study; compare planned and reported analyses.	Excerpt / metadata
Modeled cumulative dose, subgroup selection, residual behavioral confounding and external replication matter. This is not evidence of generalized cognitive impairment.	Indexed excerpt
Possible overlap with later cohort reports needs checking.	Excerpt / metadata
Species, dose, whole-body exposure and schedule differ from typical human use.	Selected text

Species and tumor findings must not be merged into the rat conclusion.	Selected text
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Rare tumors, dose-response uncertainty and species extrapolation require review.	Selected text
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A 2026 correction and methodological critiques must accompany it. Human risk extrapolation remains complex. Read with correction EMF-063.	Abstract
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Revised article and correction read through coauthor upload; supplementary spreadsheets not obtained or independently checked; human risk translation unresolved.	Selected text
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Abstract-level appraisal; code not independently rerun; synthesis overlaps underlying animal studies.	Abstract
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No abstract; full letter content has not been established from metadata.	Excerpt / metadata
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Differences in study selection and certainty assessment must be reconciled with Mevissen.	Excerpt / metadata
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Co-promotion designs do not directly estimate RF-only human risk.	Excerpt / metadata
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Protocol describes intentions, not results.	Excerpt / metadata
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Regulatory assessment is a reasoned interpretation, not a new bioassay.	Selected text
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Repository abstract and linked report have different review depths.	Selected text
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Assessment depends on the original studies and review methods.	Excerpt / metadata
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Full report needed before quoting specific judgments.	Excerpt / metadata
A critical narrative is not equivalent to a prespecified systematic review or new causal demonstration.	Excerpt / metadata
Association, selection bias and sparse high-exposure data must be separated from causal proof.	Excerpt / metadata
Small high-exposure groups; measured/calculated exposure differences, timing and selection matter. Brazilian study materially influences estimates. Causal mechanism remains unresolved.	Selected text
Wire codes are exposure proxies; constituent studies overlap other pooled analyses.	Excerpt / metadata
Leukemia evidence cannot be assumed to apply to brain tumors.	Excerpt / metadata
Curve shape and exposure categories can be unstable with few highly exposed children.	Excerpt / metadata
Trends alone cannot establish or exclude individual causation.	Excerpt / metadata

Policy judgment is not independent proof of a causal effect or a mandated setback.	Excerpt / metadata
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Animal results, endpoint variation and study quality need full appraisal.	Excerpt / metadata
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High heterogeneity for main analyses; job category is not a measured personal dose. Occupational associations cannot be assigned to nearby residents.	Abstract
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Correlated hazards can confound a field-specific interpretation.	Excerpt / metadata
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Occupation proxies, confounding and disease ascertainment need full-text review.	Excerpt / metadata
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Methodological recommendations do not establish disease risk.	Excerpt / metadata
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Measurement timing, typical-day selection and analytic criticism require review.	Abstract
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Short measurement windows may not represent pregnancy-long exposure.	Excerpt / metadata
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Exposure characterization and outcome measurement are major weaknesses.	Abstract
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Many studies had exposure/outcome bias. Most exposures exceeded typical human levels; no consistent dose-response or minimum effective level established. Experimental fertility outcomes do not directly estimate human infertility.	Abstract
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Very low certainty, imprecision and heterogeneous exposures. Results cannot establish either a causal adverse effect or absence of risk.	Indexed excerpt
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Temperature, dose and species matter; broad translation to human risk is not warranted.	Excerpt / metadata
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Compare frequency inclusion and quality assessment with the WHO-commissioned review.	Excerpt / metadata
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Inconsistency and exposure/biomarker limitations; no RF-specific patient diagnostic test follows.	Abstract
Cell cultures and endpoints do not reproduce every human exposure or disease pathway.	Abstract
A map inventories evidence; it does not provide a single causal risk estimate.	Excerpt / metadata
Thermal controls, dosimetry and sparse human data limit inference.	Abstract
Mostly acute experiments and young healthy participants. Does not settle chronic exposure or all susceptible populations; symptoms remain real even when RF attribution is unsupported.	Abstract
Older trials and variable protocols require comparison with later updates.	Excerpt / metadata
Provocation studies address causal attribution under test conditions, not the full burden of symptoms.	Excerpt / metadata

Variable endpoints and blinding procedures Abstract
need appraisal.

Observational associations are vulnerable to confounding and exposure proxies.	Excerpt / metadata
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Short-term laboratory evidence cannot resolve lifelong exposure or every age group. Certainty is endpoint-specific, not one score for the entire paper.	Indexed excerpt
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Confounding from device behavior and RF dose misclassification matters.	Excerpt / metadata
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Calling behavior and RF dose are not interchangeable; cohort reports may overlap.	Excerpt / metadata
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2005 document is historical guidance, not a complete current clinical synthesis.	Selected text
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One spot measurement may not capture peak loads or average personal exposure.	Selected text
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Australian source geometry and operating loads do not establish Oklahoma boundary exposure.	Selected text
Distance alone is an incomplete proxy for magnetic field strength.	Excerpt / metadata
Voltage, current, geometry and receptor location must be distinguished.	Excerpt / metadata
Use consistent units and separate electric from magnetic quantities.	Excerpt / metadata
Devices, countries, sampling schedules and body shielding differ.	Excerpt / metadata
Reported readings can be affected by body shielding and detection thresholds.	Excerpt / metadata
Instrument bandwidth and isotropy must match the target source.	Excerpt / metadata
Not all low-cost meters can resolve frequency or near-field components.	Selected text
Workplace distributions cannot be directly substituted for nearby-home exposures.	Excerpt / metadata

Device interference is an equipment compatibility endpoint, not evidence of cancer.	Excerpt / metadata
Specific magnetic mechanism; do not convert separation advice into a general RF setback.	Selected text
Existing guidance does not establish success rates for patients seeking advice across multiple implants.	Selected text
Search ended December 2019. Radar is an exposure analogue rather than a modern 5G cohort. Poor dosimetry, temperature control and lack of replication affected many experiments; long-term monitoring remains relevant.	Selected text
Experimental quality and heating artifacts affect apparent effects.	Excerpt / metadata
Pragmatic selection differs from a prespecified systematic review.	Excerpt / metadata
Mixed frequency bands, laboratory-to-field transfer and causal attribution of population decline require care. Authors' policy recommendation is distinct from an established site-specific effect.	Abstract
A systematic map catalogs evidence distribution; it does not pool effect sizes or establish overall ecological harm or safety. Human exposure guidelines are not automatically wildlife standards.	Abstract

Species, orientation task, spectrum and experimental setting limit generalization. Findings do not quantify bird mortality, population decline, human risk or a data-center impact radius.	Abstract
Method heterogeneity and generalization to ecosystems constrain conclusions.	Abstract
Changes in growth or biomarkers do not by themselves establish crop loss.	Excerpt / metadata
Expert workshop is not a new controlled ecological experiment.	Excerpt / metadata
Historical research priorities are not findings that the suspected effects occur.	Excerpt / metadata
Use current studies to check which gaps remain unresolved.	Excerpt / metadata
A completed appraisal requires study-level information and trained judgment.	Excerpt / metadata
PRISMA compliance alone does not prove unbiased methods or accurate conclusions.	Excerpt / metadata
Full text needed to evaluate each objection. Criticism is not itself proof that no effect exists.	Excerpt / metadata

Frequency, averaging and exposure category matter; not individualized implant clearance.	Selected text
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One instrument location and facility. EMC/power-quality characterization is not a health-outcome study or an off-site exposure model. Typical value is not labeled a mean or median.	Abstract
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Conducted emissions in power conductors do not directly describe airborne fields, neighborhood exposure or human disease risk. No local boundary measurement is supplied.	Abstract
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Power-quality criteria address grid and equipment behavior; they do not automatically establish human-health thresholds.	Excerpt / metadata
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Many exposures exceeded public reference levels; study quality and frequency coverage were limited.	Abstract
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Most exposures lasted 5–50 minutes. Only healthy participants were included. HRV is an indirect, multifactorial marker; findings do not establish effects or safety in dysautonomia or chronic illness.	Abstract
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No included study was free of risk of bias. EEG changes do not by themselves establish impaired cognition, disease or clinical adversity.	Abstract
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Full results and sex-specific analyses need detailed review; cannot generalize to all sleep disturbances.	Excerpt / metadata
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Male volunteers and head-worn all-night exposure; female and chronic-disease populations were not resolved.	Abstract
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Review scope and physiological mechanisms require full-text appraisal; do not merge with GHz phone exposure.	Excerpt / metadata
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Method differences limit synthesis; physiological variation and analytic choices can alter findings.	Abstract
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Device interference is separate from carcinogenesis or general health effects. No universal field limit or residential setback for implant recipients can be derived from this review.	Abstract
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Only 11 animal studies met inclusion criteria; no human study qualified. Effects were not independently replicated.	Selected text
Field magnitude, movement through fields and MRI context require checking before infrastructure extrapolation.	Excerpt / metadata
Experimental immune changes and proposed signaling mechanisms do not establish human immune disease from environmental RF. Exposure differences restrict translation.	Abstract
Metadata screening only; methods, temperature control and outcome certainty remain unappraised.	Excerpt / metadata
Natural geomagnetic variation and technological RF/ELF must not be combined into one exposure category.	Excerpt / metadata
Pathway and exposure-pattern heterogeneity prevented pooling milk-yield studies. Thresholds address tested contact currents, not ambient magnetic fields or a universal safe farm voltage.	Abstract
Distance is a proxy; exact exposure reconstruction, confounders and estimates need full-text review.	Excerpt / metadata

Only 3 highly exposed cases. Exposure category is apartment location, not each child's measured lifetime dose. Different models use the same cases and cannot be treated as replication.	Abstract
Exposure proxies, cancer-specific results and small subgroups need full-text extraction before quantitative claims.	Excerpt / metadata
Single-farm attribution and remediation results require appraisal; ambient EMF is a different pathway.	Excerpt / metadata
Mechanism, current path and exposure duration must be specified; not a data-center emissions study.	Excerpt / metadata
Not a current universal threshold, ambient RF standard or evidence at any proposed facility. Access is through an archived page.	Selected text
Calibration quality and instrument response must match the frequency and field conditions.	Excerpt / metadata
Metrology services do not by themselves prescribe a community health-survey protocol.	Selected text
Not an independent cohort; specific allegations require comparison with the review and response.	Excerpt / metadata

A critique is not a new animal experiment; full arguments and author response must be evaluated together.	Excerpt / metadata
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Full response content still requires reading; do not assume it resolves every criticism.	Excerpt / metadata
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Its judgments are disputed interpretations; commissioning is different from WHO adoption of a policy position.	Selected text
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Exact interval, adjustments and highly exposed counts are not captured here. Use alongside older positive or imprecise pooled analyses, not as a stand-alone resolution.	Excerpt / metadata
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Observational scenario comparisons do not establish that limits caused exposure differences. Backpack readings are not absorbed organ dose; European scenarios are not local Oklahoma measurements.	Abstract
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Instrument bandwidth, beamforming, traffic and time-division operation complicate extrapolation.	Excerpt / metadata
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Historical enforcement guidance is not a study of engineering shielding or every mitigation method.	Excerpt / metadata
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Apartment location is a proxy; findings do not settle occupational exposure or all timing hypotheses.	Selected text
Self-reported exposure and limited heavy-use representation remain important; the authors' rebuttal is not independent adjudication.	Selected text
Not a universal tool for every case-control, animal or laboratory design. Tailor the method to the actual study.	Selected text
Implementing the framework requires a protocol and documented judgments; a source list alone is not an OHAT review.	Selected text
Intervention-review guidance requires adaptation for exposure evidence; affiliation alone is not proof of bias.	Selected text
Do not treat GRADE as a journal-prestige score or assign one confidence label to every endpoint in a paper.	Selected text
2024 statutory edition; authorization does not establish appropriations or a service entitlement.	Selected text
Statutory process is distinct from a scientific recommendation; current amendments require use-specific verification.	Selected text
Nonbinding guidance; supersedes 2016 guidance on its implementation schedule; not individual clearance.	Selected text
Agency program description is not an independent performance evaluation.	Selected text

Animal exposures differ from contemporary human use; resource description is not an independent synthesis.	Selected text
Historical oversight findings do not establish every present testing procedure is inadequate.	Selected text
Exact model, lead and configuration matter; no data-center setback or personalized advice follows.	Selected text
Passive reports cannot independently establish incidence or causation; duplicates and denominator problems require analysis.	Selected text
No complete RF complaint-to-investigation outcome dataset was obtained; intake is not proof of qualified RF evaluation.	Selected text
Noise evidence is not EMF injury evidence; selected county experience does not establish national prevalence.	Selected text
Land-use policy varies by district and date; not a national rule or RF risk study.	Selected text
Most facilities do not generate noise complaints; location and design matter; findings are not uniform across sites.	Selected text
Divided jurisdiction does not prove every agency or project failed; guide is not site compliance verification.	Selected text
Private supply contracts alone do not establish extraction is exempt or illegal; not an EMF authority.	Selected text
Service existence does not establish resolution performance; separate from EMF assessment.	Selected text
Quality sampling, water-level monitoring and pumping-impact assessment answer different questions.	Selected text

Topic announcement is not evidence of awards, completed studies or outcomes.	Selected text
Exposure measurements are not tissue dose, individual compatibility or health effects.	Selected text
Program existence is not proof of RF causation or clinical effectiveness.	Excerpt / metadata
Service description retrieved through search; actual access and outcomes not independently audited.	Excerpt / metadata
614 of 5,000 invited responded, 12.3%; nonresponse bias limits generalization to U.S. clinicians.	Selected text
342 GPs; 28.2% response; not current prevalence or treatment-efficacy evidence.	Selected text
Guidance does not establish RF symptom causation or guarantee free household measurements.	Selected text
Distinguish ministerial answer from questioner allegations; service existence is not outcome evidence.	Selected text
20 consultations Jan–Oct; five physicians; 509 cohort participants are not clinical consultations; efficacy unestablished.	Selected text
Established direct and indirect effects in workplace scope; not a U.S. community standard or chronic-disease finding.	Selected text
Public advice is not an individualized diagnosis or exhaustive endpoint assessment.	Selected text

Fee and service outcomes unverified; listing is not evidence of effectiveness.	Selected text
Two-page summary only; full SFST report not independently appraised; adjustments are not proven therapy.	Selected text
Countersignature and eligibility conditions apply; no comparative health or cost-effectiveness evaluation established.	Selected text
Statistical attention threshold is distinct from regulatory or biological harm threshold.	Selected text
Not transferable U.S. authority and not power to create national RF standards.	Selected text
Process description does not establish resolution rates or health outcomes.	Selected text
Energy and water reporting is not EMF monitoring; linked legal text blocked in earlier retrieval.	Selected text
Utrecht and Basel only; correlations do not establish absolute accuracy, rural validity, implant safety or ordinary app accuracy.	Abstract
Pilot is not nationally representative or a health study; apparent unit inconsistency in abstract not reproduced.	Abstract
Project reporting is not independent validation; ongoing experiments do not establish community harm or clinical benefit	Selected text

Official two-page summary of May 2024 opinion, not full opinion appraisal; 1 Hz–100 kHz is not cellular RF.	Selected text
Early risk-detection program, not an exhaustive systematic review of every endpoint.	Selected text
Published commitments do not establish completed outcomes.	Selected text
Allegations and inquiry existence are not findings of misconduct; final outcome not established.	Selected text
Targeted review of mirrored primary-authored report; not universal safety or harm finding.	Selected text
Response is methodological argument, not an independent experiment or resolution of all critiques.	Selected text
70 rats per group, 900 MHz CDMA, 4 W/kg; sparse rare events and one dose limit sensitivity; not full NTP replication.	Selected text
Sparse counts are neither proof of no tumors nor causal proof; 70 males per group and 4 W/kg protocol differ from NTP.	Selected text
Methodological critique, not new positive experiment; author involvement in NTP design should be considered with methods.	Selected text

Not a cancer replication or test of all genotoxic endpoints; during-exposure temperature measurement failed.	Selected text
Strategic commitment, not demonstrated program effectiveness or EMF-specific benefit.	Selected text
General environmental-medicine education; does not endorse an RF causal diagnosis or treatment.	Selected text
Does not establish genetic prediction of individual RF susceptibility.	Excerpt / metadata
No validated combined EMF illness score or universal mixed-exposure metric follows.	Excerpt / metadata
Meeting report is not validation of a particular EMF protocol or clinical intervention.	Selected text
General research resource; not EMF-specific clinical outcome evidence.	Excerpt / metadata
Capacity benefits do not establish lower EMF; electrical loads and fields need separate evaluation; outside HHS siting authority.	Selected text
Search-level discovery; no EMF benefit or comparative ROI established here.	Excerpt / metadata
Search-level discovery; no independent cost-benefit or exposure analysis performed here.	Excerpt / metadata
Not EMF health evidence; search-level context only. Access is through an archived page.	Excerpt / metadata

Public summary is not a site-specific exposure assessment or full current evidence review.	Selected text
No facility-specific nuclear hazard finding; separate regulatory framework. Access is through an archived page.	Excerpt / metadata
Ethical principles do not establish a specific environmental risk, service entitlement or compensation.	Selected text
A reported cluster does not establish exposure causation; no local cluster analysis performed.	Selected text

Source URL

<https://www.federalregister.gov/documents/2026/09/21/2026-19252/request-for-information-on-electromagnetic-fields-emfs-radiofrequency-rf-radiation-and-wireless>

<https://www.govinfo.gov/content/pkg/FR-2026-09-22/html/2026-19364.htm>

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<https://www.cancer.gov/about-cancer/causes-prevention/risk/radiation/cell-phones-fact-sheet>

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<https://www.fda.gov/radiation-emitting-products/home-business-and-entertainment-products/cell-phones>

<https://www.fda.gov/media/135043/download>

<https://www.cdc.gov/radiation-health/data-research/facts-stats/cell-phones.html>

<https://www.niehs.nih.gov/health/topics/agents/emf>

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<https://www.who.int/news-room/questions-and-answers/item/radiation-electromagnetic-fields>

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Findings by topic

Read each finding with its limitation and supporting sources. Policy relevance is an editorial Evidence differs by frequency, population, exposure and outcome. These summaries do not

Topic	Evidence type	Finding
RF / adult head tumors	Human observational evidence	Principal phone-use pooled estimates near 1.00; prospective and case-control evidence must be distinguished.
RF / other cancers	Human observational synthesis	Part II pooled phone-use estimates for leukemia, NHL and thyroid cancer do not show increased risk.
RF / animal tumors	Experimental animal evidence	NTP male-rat heart tumors and animal-review glioma/schwannoma findings support a hazard concern under tested conditions.
ELF / childhood leukemia	Residential epidemiology	Older pooled studies report positive associations at higher average magnetic fields. The 2010 $\geq 0.3 \mu\text{T}$ estimate is 1.44 with a wide interval.
RF / male reproduction	Animal and in-vitro evidence	Experimental review reports reduced pregnancy rate and sperm count with endpoint-specific certainty.
RF / pregnancy outcomes	Human observational synthesis	Miscarriage, preterm birth and low-birth-weight pooled intervals include no association.
RF / acute symptoms	Controlled human experiments	Experimental review generally reports no meaningful acute symptom effects under studied conditions.
RF / cognition	Human experiments	Review conclusion generally does not support reduced short-term cognitive performance.
RF / EEG	Human physiological experiments	EEG review detects an effect in one resting 2G eyes-open protocol; task effects were not demonstrated.

RF / oxidative stress	Animal and cellular biomarkers	Some tissue-specific biomarker increases appear alongside inconsistent or null findings.
Exposure / local relevance	Measurement and engineering	RF absorption depends on frequency, geometry and body coupling; ELF exposure uses different metrics.
RF / youth brain tumors	Multinational case-control	MOBI-Kids does not show a causal association; lower odds ratios are not credible evidence of protection.
RF / adolescent memory	Prospective observational cohort	Swiss cohort reports lower figural-memory scores in selected dose and usage analyses.
ELF / occupational ALS	Occupational synthesis	Meta-analysis reports modestly elevated ALS risk; estimates depend on exposure-history assessment.
RF / cardiac regulation	Healthy-human experiments	Most studies show no resting heart-rate effects; some HRV findings vary by posture or protocol.
RF / immune effects	Narrative experimental review	Possible immune-cell changes and proposed mechanisms are discussed.
Environment / insects and birds	Experimental effects and evidence map	Insect review argues for precaution; double-blind robin experiments show compass disruption under studied noise conditions.
RF / above 6 GHz	Experimental and radar review	2021 review reports no confirmed human hazard in the low-level exposures it assessed.
Intermediate frequency / implants	Device interference evidence	Cardiac implants can malfunction in certain fields; device and exposure configuration determine susceptibility.
Livestock / contact current	Dairy-cattle synthesis	Pooled behavioral-response evidence identifies mA-range responses through tested conductive paths.
Data-center electrical emissions	Instrumentation and engineering	One-facility magnetometry found harmonic ELF fields; UPS studies examine conducted supraharmmonic propagation.

ELF / transformer-room leukemia	Registry-based childhood study	Point estimates near 1 in the conditional model; wide intervals allow appreciable increased risk.
Clinical advice and continuity	Guidelines and physician surveys	Clinical approaches and self-reported information needs vary; referral and symptom documentation models exist.
Clinical service implementation	MedNIS program report	Consultation network reports activity, recruitment and workforce difficulties.
Measurement access	French public process	Eligible public requests can access accredited independent measurements and reporting.
Rural RF tradeoffs	Ten-country measurement study	Lower village environmental RF coexisted with higher maximum-upload handset exposure.
Mapping and temporal monitoring	Validation and pilot studies	Calibrated maps and fixed sensors can characterize spatial and temporal variation.
Evidence currency	Program methods and historical oversight	Public selection criteria and continuing appraisal provide models; GAO documents historical recommendations.
Rural authority and implementation	Official jurisdiction guides and county audit	Responsibilities and technical capacity differ across issues and jurisdictions.
ELF evidence update	SCHEER official summary	Low-frequency leukemia signal remains inconclusive in the summarized assessment.
Innovation and ethics	ETAIN program and research principles	Exposure engineering and mapping are active; health studies need consent and appropriate comparators.

interpretation.

t establish local exposure or causation.

Important limitation	Practical relevance
Some retrospective heavy-use comparisons show elevated estimates. Recall/selection error and exposure measurement affect interpretation.	Supports a qualified account of the studied exposures and tumors; does not prove zero risk across all frequencies or latency periods.
Low certainty for phone outcomes; very low for occupational outcomes; inadequate far-field and dose-response evidence.	Sparse null evidence is a weaker basis for reassurance than precise, directly applicable evidence.
Corrected review retains male-rat findings; newer Japan/Korea single-dose bioassays found no significant increase, with sensitivity disputed. No direct human-risk conversion.	Animal hazard findings and human population findings address different questions; neither should erase the other.
Recent pooled analysis reports OR 1.01 at $\geq 0.4 \mu\text{T}$. Exposure thresholds differ; selection, sparse high-exposure groups and causal explanation remain important.	Association is not a measured disease threshold. Do not substitute spot peaks for the time-averaged exposure used in studies.
Most exposures exceed typical human levels; many studies have bias and inconsistent dose-response. A corrigendum exists.	Evidence of experimental effects does not quantify infertility risk in people living near infrastructure.
Evidence is very uncertain; wide intervals permit important adverse effects for some endpoints.	Do not turn a nonsignificant result into proof of safety, or a large imprecise point estimate into proof of harm.
Exposure perception differs from actual blinded exposure. Chronic exposure and all susceptible groups are not resolved. Corrigendum identified.	Symptoms and disability merit attention; attribution to RF requires separate evidence.
Uncertainty remains for multiple subdomains; observational and long-term questions differ.	Keep short-term task performance separate from developmental or chronic cognitive claims.
Heterogeneity and bias restrict synthesis. A physiological change is not automatically an adverse clinical outcome.	Describe the measured signal and protocol; avoid converting it into a disease claim.

Authors rate evidence very low certainty because of bias and heterogeneity.	Mechanistic plausibility must be kept distinct from demonstrated human disease risk.
No site-specific dose or health-risk estimate has been established in this collection.	Equipment type, electrical demand, distance and a generic EMF reading cannot substitute for characterized exposure
Proxy recall, pre-diagnostic phone-use changes and residual confounding leave a small increased risk unresolved.	Distinguish participants aged 10–24 from children alone.
Overall interval includes zero; two subgroup intervals do not. Modeling, confounding and replication remain important.	A specific task association does not establish general cognitive impairment.
Large heterogeneity and occupation-based exposure proxies limit causal interpretation.	Occupational results do not quantify residential risk.
Short durations, healthy participants and heterogeneous methods limit generalization.	HRV changes alone do not establish autonomic disease.
Authors acknowledge contradictory results and insufficient agreement; human translation is unresolved.	This review does not establish RF as a cause of immunodeficiency or autoimmune disease.
Environmental map finds poor methods and sparse field evidence. Ecological population consequences remain uncertain.	Specific behavioral or laboratory findings must not be converted into a site-specific ecosystem damage estimate.
Search through 2019; radar evidence is not a modern 5G cohort. Dosimetry and thermal control weaknesses remain.	Avoid extending this review to every 5G band or lifelong exposure pattern.
A universal implant-patient limit or setback was not derivable.	Device-specific interference assessment is separate from general biological risk assessment.
Milk-yield pooling was not possible; path and duration matter. Dairy-cattle findings do not establish beef-cattle or ambient-field risk.	Measure the relevant contact path before applying these results to a ranch.
Interior field values and conductor emissions cannot establish off-site exposure or health outcomes at another site.	Useful for specifying the exposure being investigated, not for assigning a health radius.

Only 3 highly exposed cases; alternate model estimates use the same dataset.	An imprecise null result is not evidence excluding all meaningful risk.
Guidelines are not efficacy trials; survey response bias and foreign applicability matter.	Assess U.S. guidance and access; document patient-important outcomes without mandatory agreement.
Cohort size is not consultations; follow-up evaluation incomplete.	Fund staffing and measure completed care and patient outcomes before scale-up.
No comparative ROI or health-outcome benefit demonstrated.	Pilot affordable qualified assessment with clear action and response responsibilities.
Observational scenarios; not proof that precautionary limits cause exposure changes.	Evaluate environmental and personal-device contributions together.
Two-city mapping and selected fixed sites are not universal validation or health studies.	Validate locally; disclose missing coverage, uncertainty and decision triggers.
Published processes do not establish national outcomes or all current testing failures.	Publish scoped assessments, correction handling, update triggers and responsibility for application.
Selected cases are not a national complaint census; non-EMF pathways retain separate authority.	Shared expertise and targeted lawful county tools are more concrete than an unstaffed portal.
Summary not full opinion; distinct from RF; no site-specific causal finding.	Preserve separate low-frequency assessment alongside RF.
Engineering reduction is not proven clinical benefit; program reports are not efficacy evidence.	Select pilots by decision value and protect access to ordinary services outside research.

Source IDs

EMF-035; EMF-037;
EMF-038; EMF-039;
EMF-045; EMF-164;
EMF-166

EMF-036

EMF-059; EMF-060;
EMF-061; EMF-062;
EMF-063; EMF-064;
EMF-065; EMF-165;
EMF-227; EMF-228;
~~EMF-229; EMF-230~~

EMF-074; EMF-075;
EMF-076; EMF-168;
EMF-025

EMF-088; EMF-089

EMF-090

EMF-097; EMF-099;
EMF-101

EMF-102; EMF-103;
EMF-057

EMF-139; EMF-141;
EMF-143

EMF-093; EMF-094
EMF-013; EMF-106; EMF-107; EMF-111; EMF-112; EMF-134; EMF-135
EMF-050; EMF-051; EMF-052; EMF-053
EMF-057; EMF-058; EMF-102; EMF-103
EMF-082
EMF-138
EMF-147
EMF-122; EMF-123; EMF-124
EMF-119
EMF-144
EMF-150; EMF-154; EMF-155; EMF-156
EMF-134; EMF-135; EMF-107; EMF-137

EMF-152; EMF-151; EMF-075; EMF-168
EMF-205; EMF-206; EMF-207; EMF-208; EMF-213
EMF-209
EMF-214; EMF-216; EMF-217
EMF-169
EMF-219; EMF-220
EMF-027; EMF-188; EMF-223; EMF-224
EMF-192; EMF-194; EMF-195; EMF-196; EMF-197; EMF-198
EMF-222
EMF-221

Reported numerical results

44 extracted comparisons. Estimates, counts, measurements and score changes have been calculated. Blanks mean not extracted or not applicable. Zero is retained. Confidence intervals are calculated. Reviews and original studies may reuse data. Dataset labels and limitations identify key

Source ID	Population / endpoint	Exposure / comparator
EMF-059	Male-rat heart schwannoma	GSM 0 W/kg
EMF-059	Male-rat heart schwannoma	GSM 1.5 W/kg
EMF-059	Male-rat heart schwannoma	GSM 3 W/kg
EMF-059	Male-rat heart schwannoma	GSM 6 W/kg
EMF-059	Male-rat heart schwannoma	CDMA 0 W/kg
EMF-059	Male-rat heart schwannoma	CDMA 1.5 W/kg
EMF-059	Male-rat heart schwannoma	CDMA 3 W/kg
EMF-059	Male-rat heart schwannoma	CDMA 6 W/kg
EMF-039	Human glioma	Regular use vs nonregular
EMF-039	Human glioma	>=10 years since first use
EMF-039	Human glioma	>=1640 recalled cumulative hours

EMF-035	Human glioma	Ever/regular phone use vs none/nonregular
EMF-178	Human brain tumors, all types	Users vs nonusers; repeats EMF-038
EMF-036	Human Leukemia	Ever/regular phone use vs none/nonregular
EMF-036	Human Non-Hodgkin lymphoma	Ever/regular phone use vs none/nonregular
EMF-036	Human Thyroid cancer	Ever/regular phone use vs none/nonregular
EMF-036	Human leukemia	≥ 10 years mobile-phone use
EMF-036	Human non-Hodgkin lymphoma	≥ 10 years mobile-phone use
EMF-097	Human acute Headache	Head RF vs sham
EMF-097	Human acute Sleep disturbance	Head RF vs sham
EMF-097	Human acute Sleep disturbance	Whole-body RF vs sham
EMF-090	Human Miscarriage	RF exposure contrast; exact setting not extracted
EMF-090	Human Preterm birth	RF exposure contrast; exact setting not extracted
EMF-090	Human Low birth weight	RF exposure contrast; exact setting not extracted
EMF-075	Childhood leukemia	$0.1\text{--} < 0.2\text{ }\mu\text{T}$ vs $< 0.1\text{ }\mu\text{T}$

EMF-075	Childhood leukemia	0.2–<0.3 μ T vs <0.1 μ T
EMF-075	Childhood leukemia	$\geq$ 0.3 μ T vs <0.1 μ T
EMF-168	Childhood leukemia	$\geq$ 0.4 μ T vs <0.1 μ T
EMF-093	Rodent plasma oxidized DNA bases	RF vs control
EMF-093	Rodent testis oxidized DNA bases	RF vs control
EMF-082	Occupational ALS	Higher vs lower occupational ELF exposure
EMF-082	Occupational ALS	Electrical occupations
EMF-082	Occupational ALS	Highest/longest, full occupational history
EMF-082	Occupational ALS	Highest/longest, few time points
EMF-057	Adolescent figural-memory score	Whole sample; per 953 mJ/kg/day dose IQR
EMF-057	Adolescent figural-memory score	Right-side phone users; per 953 mJ/kg/day dose IQR
EMF-057	Adolescent figural-memory score	Network-operator-data subset; per 341 mJ/kg/day dose IQR
EMF-152	Childhood leukemia	Intermediate vs unexposed; conditional model

EMF-152	Childhood leukemia	High vs unexposed; conditional model
EMF-152	Childhood leukemia	Intermediate vs unexposed; mixed model
EMF-152	Childhood leukemia	High vs unexposed; mixed model
EMF-134	Interior data-center rms magnetic field	One sensor position; one-month assessment
EMF-150	Dairy-cow behavioral response	Contact current at 50/60 Hz
EMF-150	Dairy-cow first behavioral response	Ascending-current experimental protocols

ve different meanings and cannot be pooled directly.

ire shown only where reported.

known overlap. No meta-analysis is performed.

Measure and units	Estimate	95% CI lower	95% CI upper	Events	Denominator
Raw incidence				0	90
Raw incidence				2	90
Raw incidence				1	90
Raw incidence				5	90
Raw incidence				0	90
Raw incidence				2	90
Raw incidence				3	90
Raw incidence				6	90
Odds ratio	0.81	0.7	0.94		
Odds ratio	0.98	0.76	1.26		
Odds ratio	1.4	1.03	1.89		

Pooled relative risk	1.01	0.89	1.13
Relative risk	0.97	0.9	1.04
Pooled relative risk	0.99	0.91	1.07
Pooled relative risk	0.99	0.92	1.06
Pooled relative risk	1.05	0.88	1.26
Pooled relative risk	1.03	0.85	1.24
Pooled relative risk	0.99	0.86	1.15
Standardized mean difference	0.08	-0.07	0.22
Standardized mean difference	-0.01	-0.22	0.2
Standardized mean difference	0.	-0.15	0.15
Relative risk	1.06	0.96	1.18
Relative risk	1.19	0.32	4.37
Relative risk	2.9	0.69	12.23
Odds ratio	1.07	0.81	1.41

Odds ratio	1.16	0.69	1.93
Odds ratio	1.44	0.88	2.36
Odds ratio	1.01		
Standardized mean difference	2.25	1.27	3.24
Standardized mean difference	1.6	0.62	2.59
Pooled relative risk	1.14	1.	1.3
Pooled relative risk	1.41	1.05	1.92
Pooled relative risk	1.89	1.31	2.73
Pooled relative risk	1.06	0.75	1.57
Memory-score change	-0.22	-0.47	0.03
Memory-score change	-0.39	-0.67	-0.1
Memory-score change	-0.26	-0.42	-0.1
Relative risk (authors label)	1.	0.5	1.9

Relative risk (authors label)	1.1	0.3	3.8
Relative risk (authors label)	1.4	0.8	2.5
Relative risk (authors label)	1.3	0.4	4.4
Typical magnetic flux density (μT)	0.5		
First significant response current (mA)	3.		
Weighted mean response threshold (mA)	4.		

Sample size	Sample unit	Page / table
		Summary pp.xxv–xxvi; Table 20 p.65
		Summary pp.xxv–xxvi; Table 20 p.65
		Summary pp.xxv–xxvi; Table 20 p.65
		Summary pp.xxv–xxvi; Table 20 p.65
		Summary pp.xxv–xxvi; Table 47 p.103
		Summary pp.xxv–xxvi; Table 47 p.103
		Summary pp.xxv–xxvi; Table 47 p.103
		Summary pp.xxv–xxvi; Table 47 p.103
		Abstract Results
		Abstract Results
		Abstract Results

Abstract Results

Opening paragraph;
pp.1555–1556

Abstract Results

Abstract Results

Abstract Results

Abstract Results

Abstract Results

Abstract Results

Abstract Results

Abstract Results

Indexed Results excerpt

Indexed Results excerpt

Indexed Results excerpt

Abstract Results; Table 3

Abstract Results; Table 3

Abstract Results; Table 3

Indexed Results excerpt

38 Rodents reported in abstract	Institutional abstract Results
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24 Rodents reported in abstract	Institutional abstract Results
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Abstract exposure-assessment strata

Abstract exposure-assessment strata

Abstract exposure-assessment strata

Abstract exposure-assessment strata

Indexed Results

532 Adolescents	Indexed Results
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274 Adolescents	Indexed Results
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Abstract Results

Abstract Results

Abstract Results

Abstract Results

Publisher abstract

Indexed abstract Results

355 Cows

Indexed abstract Results

Interpretation limit	Dataset / synthesis
Shared sham; whole-body 900 MHz, 9h10m/day. Survival differs; raw counts are not adjusted risks.	NTP TR595: shared sham
Shared sham; whole-body 900 MHz, 9h10m/day. Survival differs; raw counts are not adjusted risks.	NTP TR595: shared sham
Shared sham; whole-body 900 MHz, 9h10m/day. Survival differs; raw counts are not adjusted risks.	NTP TR595: shared sham
Shared sham; whole-body 900 MHz, 9h10m/day. Survival differs; raw counts are not adjusted risks.	NTP TR595: shared sham
Shared sham; whole-body 900 MHz, 9h10m/day. Survival differs; raw counts are not adjusted risks.	NTP TR595: shared sham
Shared sham; whole-body 900 MHz, 9h10m/day. Survival differs; raw counts are not adjusted risks.	NTP TR595: shared sham
Shared sham; whole-body 900 MHz, 9h10m/day. Survival differs; raw counts are not adjusted risks.	NTP TR595: shared sham
Shared sham; whole-body 900 MHz, 9h10m/day. Survival differs; raw counts are not adjusted risks.	NTP TR595: shared sham
Interview-based case-control. Highest category has implausible reports; causal reading limited by bias.	INTERPHONE
Interview-based case-control. Highest category has implausible reports; causal reading limited by bias.	INTERPHONE
Interview-based case-control. Highest category has implausible reports; causal reading limited by bias.	INTERPHONE

63 articles across review; article count is not independent population count. Endpoint-specific authors' certainty.	Human cancer Part I synthesis
Rebuttal reiterates cohort result; not independent replication. Few heavy users acknowledged.	Million Women: repeated result
Low certainty; few studies; source-specific exposure.	Human cancer Part II synthesis
Low certainty; few studies; source-specific exposure.	Human cancer Part II synthesis
Low certainty; few studies; source-specific exposure.	Human cancer Part II synthesis
Three studies; duration is not absorbed dose.	Human cancer Part II synthesis
Three studies; sparse long-duration evidence.	Human cancer Part II synthesis
Acute experimental symptoms; positive SMD means more symptoms. Correction content not compared.	Acute symptom synthesis
Acute experimental symptoms; positive SMD means more symptoms. Correction content not compared.	Acute symptom synthesis
Acute experimental symptoms; positive SMD means more symptoms. Correction content not compared.	Acute symptom synthesis
Very low certainty. Heterogeneous exposures; exact model details not extracted.	Female reproductive synthesis
Very low certainty. Heterogeneous exposures; exact model details not extracted.	Female reproductive synthesis
Very low certainty. Heterogeneous exposures; exact model details not extracted.	Female reproductive synthesis
Adjusted for age, sex and study. Sparse high-exposure data; partly measured/calculated fields.	ELF pooled 2010

Adjusted for age, sex and study. Sparse high-exposure data; partly measured/calculated fields.	ELF pooled 2010
Adjusted for age, sex and study. Sparse high-exposure data; partly measured/calculated fields.	ELF pooled 2010
Interval not extracted. Different high-exposure cutoff from main 2010 comparison.	ELF pooled 2022
Two studies; very low certainty; biomarker rather than clinical disease.	Oxidative stress synthesis
Two studies; very low certainty; exposure details not extracted.	Oxidative stress synthesis
Different overlapping strata from one synthesis. Main heterogeneity >70%; do not pool these four summaries.	Occupational ALS synthesis
Different overlapping strata from one synthesis. Main heterogeneity >70%; do not pool these four summaries.	Occupational ALS synthesis
Different overlapping strata from one synthesis. Main heterogeneity >70%; do not pool these four summaries.	Occupational ALS synthesis
Different overlapping strata from one synthesis. Main heterogeneity >70%; do not pool these four summaries.	Occupational ALS synthesis
Estimated cumulative brain dose. Overlapping subgroups; score change is not SMD or clinical impairment.	Swiss adolescent memory cohort
Estimated cumulative brain dose. Overlapping subgroups; score change is not SMD or clinical impairment.	Swiss adolescent memory cohort
Estimated cumulative brain dose. Overlapping subgroups; score change is not SMD or clinical impairment.	Swiss adolescent memory cohort
Logistic-model estimates labeled RR by authors. Same cases across models; high category has 3 cases.	Transformer exposure multi-country

Logistic-model estimates labeled RR by authors. Same cases across models; high category has 3 cases.	Transformer exposure multi-country
Logistic-model estimates labeled RR by authors. Same cases across models; high category has 3 cases.	Transformer exposure multi-country
Logistic-model estimates labeled RR by authors. Same cases across models; high category has 3 cases.	Transformer exposure multi-country
Approximate typical value, not an extracted mean or median. One facility; no off-site health inference.	Data-center magnetometry
Statistical response threshold for tested paths; not a universal no-effect limit.	Dairy-cattle contact-current synthesis
355 cows in pooled threshold analysis; not an ambient-field or human threshold.	Dairy-cattle contact-current synthesis

Extraction basis
Official report + HTML summary
Official report + HTML summary
Official report + HTML summary
Official report + HTML summary
Official report + HTML summary
Official report + HTML summary
Official report + HTML summary
Official report + HTML summary
PubMed abstract only
PubMed abstract only
PubMed abstract only

PubMed abstract only
Full author response
PubMed abstract
PubMed abstract
PubMed abstract
PubMed abstract
PubMed abstract
PubMed abstract
PubMed abstract
PubMed abstract
Primary indexed abstract excerpt
Primary indexed abstract excerpt
Primary indexed abstract excerpt
Publisher full text, selected sections

Publisher full text, selected sections
Publisher full text, selected sections
Primary indexed Results excerpt
Author-institution abstract
Author-institution abstract
PubMed abstract
PubMed abstract
PubMed abstract
PubMed abstract
Primary PMC indexed Results
Primary PMC indexed Results
Primary PMC indexed Results
Author-institution abstract

Author-institution abstract

Author-institution abstract

Author-institution abstract

IEEE indexed publisher
abstract

Publisher indexed Results

Publisher indexed Results

Exposure measures and interpretation

Use the metric appropriate to the frequency and exposure pattern.

SAR = specific absorption rate. RF = radiofrequency. ELF = extremely low frequency.

Exposure	Source examples
RF	Phones, antennas and RF-emitting equipment
ELF	Power-frequency electrical infrastructure
Intermediate frequency	Switching equipment, induction and some wireless power systems
Static fields	DC systems and static magnetic sources
Contact current	Grounding and conductive contact pathways
Site applicability	Any proposed local health analysis

athway. Distance or facility power alone does
extremely low frequency. No local exposure I

Relevant metrics

SAR (W/kg); field strength (V/m or A/m);
power density (W/m²)

Magnetic flux density (μT or mG); electric
field (V/m)

Frequency-resolved fields and relevant
coupling/dose metric

Magnetic flux density; spatial gradient
where relevant

Voltage, impedance and current through an
identified path

Actual measurement or validated model
tied to time, location and operation

; not establish personal dose.

measurements are supplied.

Interpretation	Source IDs
Frequency, body coupling, geometry, duty cycle and averaging determine applicability. External field strength is not automatically absorbed dose.	EMF-013; EMF-019; EMF-111; EMF-112; EMF-114
Residential leukemia studies often use long-duration averages. Frequency response, load and spatial/temporal variation matter. 1 μ T = 10 mG.	EMF-106; EMF-107; EMF-108; EMF-075
Do not merge intermediate-frequency emissions with 50/60 Hz or wireless RF. Device-specific harmonic spectra are relevant.	EMF-135; EMF-137; EMF-144
Static, time-varying and pulsed fields have different exposure characteristics.	EMF-145; EMF-146
Stray voltage is a different exposure pathway from airborne RF or ambient magnetic fields. Livestock evidence requires contact-path characterization.	EMF-150; EMF-154; EMF-155; EMF-156
The library contains no verified local dose, disease cluster or causal site finding. Electrical capacity and distance alone do not supply those quantities.	EMF-013; EMF-106; EMF-107; EMF-134; EMF-135