

Responses to HHS RF/EMF Questions

Docket HHS-OASH-2026-0397 | Occupational radar-maintenance experience

Summary

I ask HHS to include current and retired radar-maintenance technicians in its assessment of RF/EMF exposure and health. My experience raises questions about whether assessments represented energized maintenance, near-field working positions and simultaneous transmitter operation, and how those assessments informed medical surveillance. Written safety programs existed; I do not recall ever receiving radiation-related medical surveillance during my FAA employment. Records and research are needed to answer whether a gap existed in practice.

This response addresses Questions 2, 3, 5, 6, 7, 8, 9, 10, 11, 12, 16, 17 and 18. The headings summarize the questions rather than reproduce them verbatim. The supporting attachment provides a partial work account, historical requirements, reproduced source material, references and policy recommendations.

Question 2 - Perspective and sources

I respond as a retired FAA Air Traffic Systems Specialist, a worker with occupational radar and communications-equipment experience, and a patient. My Illinois Air National Guard work ran from 1981-1989 and includes military service and civilian Guard technician employment. My FAA civilian employment ran from 1990-2017. Those work histories remain distinct. My response draws on first-person recollection, published government orders and technical manuals, and the scientific literature cited in the supporting attachment. It is not a clinical cohort study or a measured personal-dose assessment.

Question 3 - Exposure experience and potential health effects

During my FAA employment (1990-2017), my work included ASR-8 airport surveillance radar, ATCBI-3/5 beacon equipment, and VHF/UHF communications transmitters operating simultaneously. I spent hours tuning energized klystrons and transmitter cavities. My recurring tasks included klystron replacement and pulse-forming-network troubleshooting. I recall at least two episodes when shielding was replaced with plexiglass to observe arcing during energized troubleshooting. My ANG work (1981-1989) included F-4C/D systems and radar bench alignment. The AN/AWM-27/27F workbench allowed aircraft radar units to operate during troubleshooting and alignment. I removed covers or protective shields, further disassembled the units, and energized them for troubleshooting and alignment. This placed me close to exposed high-voltage power-supply and modulator circuitry, including the discharge thyratron and magnetron. Those maintenance conditions require evaluation of RF emissions and possible equipment-generated X-rays at my actual working position; the available information does not establish an individual dose. I also performed AN/ALQ-119 workshop troubleshooting approximately 1987-1989 and recall three traveling-wave tubes requiring high voltage.

My medical history includes primary hyperparathyroidism, endocrine evaluation and parathyroid surgery. I am asking whether occupational exposures may have contributed, without presenting that relationship as established. The available exposure information does not establish my RF level, whether a limit was exceeded, or a reliable relationship between changes in exposure and health. Possible equipment-generated X-rays are a separate ionizing-radiation question. The attachment provides a partial account of my maintenance work.

Question 5 - Relevant frameworks and improvements

HHS should consider FAA Order 3900.19B, chapters 12 and 14, and FAA Order 6050.32B, chapter 16, as historical examples of medical-surveillance and task-assessment frameworks. Applicable editions should be matched to the work period. The Air Force AFOSH 161-9 framework and Navy NAVSHIPS 0900-005-8000 technical manual provide additional occupational context. Their relevance is the recognized need to evaluate actual duties, equipment configurations and worker positions, not proof of my individual dose. [Attachment references 1, 2, 15, 23]

The NAVSHIPS AN/APQ-109 entry lists a fixed-beam personnel hazard distance of 60 feet and zero seconds per 30-second interval inside that distance, subject to the manual's stated conditions and qualified equipment-specific assessment. The attachment reproduces that entry and explains its historical exposure basis. Antenna-beam distances should not substitute for evaluation of bench troubleshooting or cabinet access.

Assessment classifications should account for frequency, peak and average power, modulation, pulse characteristics, duration, repeated tasks, simultaneous sources, antenna configuration, near-field position and changes to shielding. HHS should evaluate whether existing procedures adequately represent those conditions and how their results are disclosed to workers and physicians. Assess indoor maintenance conditions in the building nearest the emitters, including possible reflections and standing waves. Establish their significance through building and equipment information and measurements; external antenna calculations alone do not resolve indoor exposure.

Question 6 - Health effects attributed to current limits

My experience does not establish that current exposure limits caused adverse health effects. Without task-specific exposure information, my illness cannot determine the adequacy of a numerical limit. HHS should distinguish research about biological effects from evidence that a particular limit fails to protect workers under defined conditions.

Question 7 - Methods for characterizing exposure

The FAA framework described in the attachment uses radiation surveys, measurements where appropriate, calculations and documented task assessments. For technicians, these should describe the energized equipment, source configuration, worker position and duration. Historical reconstruction can use equipment specifications, maintenance records and worker accounts, with uncertainty stated. Ionizing-radiation dosimeters and RF measurements answer different questions; neither should be presented as a substitute for the other. [Attachment references 1, 2, 4]

Question 8 - Better representation of real-world work

Evaluate maintenance configurations alongside ordinary operation. Include close working positions, simultaneous communications/radar/beacon operation, open cabinets, altered shielding, component changes and repeated energized servicing. Reassess when the work or equipment changes. State when earlier measurements are not demonstrably representative of later tasks, or when later measurements cannot reconstruct earlier conditions. Evaluate RF and possible equipment-generated X-rays separately while accounting for possible coexistence.

Question 9 - Information workers and physicians need

Disclose task-specific assessment results, the operating and shielding conditions evaluated, relevant exposure measurements or estimates, uncertainty, protective measures, training requirements, and decisions about medical surveillance or referral. Explain who holds the records and how current and retired workers can obtain them. FAA Order 3900.19B required retention of radiation-survey data, exposure records and related medical evaluations for **employment plus 30 years**; its historical requirement is reproduced and explained in the attachment. [Attachment reference 1]

Obtaining the evidence has itself become a burden. Through FOIA, I have requested RF surveys, equipment configurations, technical manuals, radiation-safety training and occupational-health records. I have pursued multiple requests, follow-ups and an appeal, yet the records needed to evaluate my maintenance conditions are not readily available to me. I ask HHS to address this practical barrier: retention requirements must be accompanied by an effective way for current and retired workers to obtain their records. Where records cannot be located, agencies should explain the searches, transfers and documented disposition. Delayed or unavailable evidence impedes medical evaluation and research.

Question 10 - Occupational monitoring and health surveillance

Earlier recognition and follow-up of abnormal findings may create opportunities for diagnosis and treatment. I ask HHS to evaluate whether occupational-health processes connect such findings with appropriate medical evaluation and review of continuing workplace exposures.

FAA Order 3900.19B identifies an Occupational Medical Surveillance Program and a radiation-safety program. Those written programs are relevant potential sources of workplace assessments and medical-review records. I do not recall ever receiving medical surveillance related to radiation exposure during my FAA employment. I recall there was a Safety and Environmental Compliance Manager, but I do not recall radiation concerns being communicated to me. I seek an explanation of how the requirements applied to my duties and the records supporting the decisions made.

The research question is whether assessments, communication, surveillance decisions and follow-up formed an effective process in practice. Program existence does not resolve implementation; incomplete records do not establish either that surveillance was absent or that it was adequate. My records requests have not supplied a complete assessment and health-monitoring history.

HHS should evaluate occupational monitoring and longitudinal cohorts that include retired technicians and workers who never reported an incident. With consent and privacy safeguards, relate defined work histories and exposure information to medical outcomes over time. Potential benefits are improved exposure classification and recognition of delayed illness. Challenges include incomplete records, changing equipment, uncertain historical exposure and other disease risk factors. Records unavailable for review should be marked as uncertain rather than classified as evidence of no exposure or no illness.

Question 11 - Workers, older adults and other relevant populations

Workers performing energized servicing need task-specific assessments because their positions and equipment access can differ from ordinary users or bystanders. Include retired technicians and older adults when studying delayed outcomes. Record relevant preexisting conditions and established risk factors without assuming either heightened RF susceptibility or an occupational cause. Research should test those questions using defined exposure groups and appropriate comparisons.

Question 12 - Evidence below current federal limits

I do not have task-specific measurements that would establish my exposure was below current federal limits. The attachment's mechanistic and cell studies should not be treated as proof that sub-limit RF exposure caused my illness. HHS should evaluate exposure conditions, dosimetry, replication and clinical relevance before using those studies to judge the protection afforded by a limit.

Question 16 - Priority research gaps

Prioritize occupational maintenance exposure, incomplete historical assessment records, long-term outcomes after retirement, and endocrine outcomes that distinguish thyroid function from parathyroid disease and calcium regulation. Include metabolic and gastrointestinal outcomes where biologically justified, distinguishing symptoms from diagnoses. Studies should use defined comparison groups and consider age, medical history and established risk factors.

Evaluate Martin Pall's proposed voltage-gated calcium-channel pathway through critical review and independent replication under occupationally relevant frequencies and pulse patterns. Cellular calcium signaling and serum calcium are different measures; one should not be used as a proxy for the other. [Attachment reference 17]

Study possible interactions between RF and ionizing radiation using each exposure alone and combined conditions, with exposure sequence and timing defined. The attachment describes cell studies with differing results; they do not establish disease causation in technicians. Potential equipment-generated X-rays belong in this combined-exposure question while remaining distinct from the RFI's non-ionizing focus. Therapeutic X-ray/parathyroid research provides latency context, not a technician dose estimate or proof of RF causation. [Attachment references 6, 18-20]

Question 17 - Federal research coordination

HHS should coordinate with FAA/DOT, the Department of Defense, the Department of the Air Force, ANG and occupational-health agencies to obtain the equipment, maintenance and assessment information needed for research. I recommend that NIH support independent mechanism and long-term outcome studies, CDC/NIOSH support occupational surveillance and exposure reconstruction, and FDA contribute relevant electronic-product radiation expertise. These are proposed roles, not a statement that these activities already occur.

Use compatible exposure descriptions and outcome definitions across studies, preserve distinctions between military duty and civilian employment, and make relevant records accessible to workers and researchers under privacy safeguards. Explain which office is responsible for continuing access and follow-up when agencies reorganize or workers retire.

Question 18 - Additional evidence and recommendations

Please read the accompanying supporting attachment, ANG and FAA Radar Maintenance: Radiation Safety, Exposure Records and Questions About Health Monitoring. It supplies the rest of the story: my detailed work accounts, the historical FAA and Air Force framework, the reproduced NAVSHIPS AN/APQ-109 entry, FAA Figure 16-2, the reproduced AFOSH Standard 161-9 requirements, records-access questions, research references and seven policy requests.

The central request is meaningful health protection for current and retired technicians and evidence showing how occupational requirements operated in practice. Considerable attention was devoted to written radiation safety; those requirements should help answer the exposure and medical-review questions that workers and physicians face. Where review identifies inadequate evidence or protection, agencies should address it.

As an additional policy recommendation, I ask HHS to work with Congress and the relevant agencies on a compensation pathway for occupational radiation harm, coordinated with VA disability claims. VA allows postservice claims without a filing deadline, while FECA generally has a three-year filing rule with special provisions for latent disability. The attachment explains this military-civilian difference and requests parallel evaluation with shared evidence and clear benefit-coordination guidance. This is a recommendation for policy consideration, rather than a request that this RFI decide individual entitlement. [Attachment references 24, 25]

Reading the response and attachment together

The numbered response presents the public-health questions and recommendations. The supporting attachment preserves the detailed complaint and supporting material. Reference numbers cited here correspond to the attachment. Both documents are intended as parts of one response to this docket.

Selected source links

HHS RFI and numbered questions: <https://www.govinfo.gov/content/pkg/FR-2026-09-21/html/2026-19252.htm>

FAA Order 3900.19B: https://www.faa.gov/documentLibrary/media/order/occ_safety/media/FINAL3900.pdf

Pall mechanistic review: <https://pubmed.ncbi.nlm.nih.gov/23802593/>

VA postservice filing guidance: <https://www.va.gov/disability/how-to-file-claim/when-to-file/>

FECA statute, sections 8122 and 8116: <https://www.dol.gov/agencies/owcp/FECA/regs/statutes/feca>