Polychlorinated Biphenyls (PCBs) in the Minuteman ICBM Weapon System

ABOUT POLYCHLORINATED BIPHENYLS

The Torchlight Initiative is concerned by a potential increased risk of non-Hodgkin lymphoma (NHL), other cancers, blood and lymphatic system disorders, and autoimmune diseases that could be related to PCB exposure from the Minuteman weapon system.

- Studies in animals provide conclusive evidence that PCBs cause cancer while studies in humans raise concerns regarding potential carcinogenicity of PCBs
    - Taken together, the study data strongly suggest PCBs are probable human carcinogens
- PCBs are known to suppress the immune system which has been demonstrated as a risk factor for NHL and other cancers/lymphomas
    - Suppression of the immune system is a possible mechanism for induced cancers
- PCBs are a forever chemical and are bio-accumulative in the food chain
- PCBs are resistant to degradation and can persist for decades after removal so exposure may occur years after a cleanup occurred

CONTINUED PRESENCE OF PCBS IN MINUTEMAN ICBM FACILITIES

- PCBs have been present in the Launch Control Centers (LCCs) and Launch Facilities (LFs) from the testing and fielding of the Minuteman weapon system (including all variants) beginning in 1962 to an undetermined date when all components were to be replaced
- Maintenance dispatches to clean up PCB leaks, Technical Order (TO) warnings, LCC warning labels, Time Compliance Technical Orders (TCTOs) to replace PCB containing equipment, and the 564th Missile Squadron (MS) Environmental Assessment confirm PCBs were present in the battery charger capacitors, filter monitors, power supply units, light ballasts, and in many electronic filter boxes and electrical capacitors used throughout the WS-133A/M and WS-133B Minuteman weapon systems
- Documented PCB leaks, water intrusion through power filters containing PCBs, cleanup, and disposal procedures, combined with the 24 hours/day, 7 days/week, 365 days/year manning and operations since 1962 within confined spaces, and recycled airflow of the LCCs may present a significant, cumulative toxic exposure risk to the missile community
- AFGSC and USAFSAM are in the first stage of their study which began in 2023
    - Sampling performed as part of this study (also in 2023) confirmed PCBs were present at detectable levels in LCCs at Malmstrom and Minot AFBs; at some of these sites, the levels were above the EPA designated safe threshold
    - The AFGSC and USAFSAM are actively addressing detection and remediation of the confirmed presence of PCBs in these LCCs

- PCBs are not the only potential hazard to be considered, but they should be thoroughly researched to determine the risk they present (or presented in the past) to military members serving in the ICBM mission

PCB EXPOSURE PATHWAYS IN THE MINUTEMAN WEAPON SYSTEM

- Missileers and maintenance team members were regularly exposed to PCBs while maintenance crews removed/replaced PCB containing components within the confined LCC area, or when they cleaned up PCB contamination
- Ground water regularly infiltrated the electrical filter boxes which contained PCBs, causing the PCBs to enter and accumulate in the LCC tunnel junction area
- Crewmembers walked through PCB residue, tracking it into the LCC carpet, crew vehicles, Missile Alert Facilities (MAFs), personal vehicles, base facilities, and own their homes via clothing and footwear where dermal absorption likely occurred
- Maintenance and operations personnel routinely handled PCB containing equipment without gloves or other Personal Protective Equipment (PPE) resulting in dermal exposure and absorption
- When PCB oil is allowed to dry and break down, the resulting dust can be inhaled or absorbed through the skin. Air filtration systems were not examined to determine presence of PCB dust in LCCs and LFs
- Cleanup of areas with known PCB contamination was commonly performed with rags and industrial solvents. These areas were not routinely checked for residual/lingering contamination

PCB RESOURCES AND LINKS

Global Strike Command Reports Initial ICBM PCB Survey Results

Air Force Finds Elevated Levels of Toxic Chemicals at Minot (airandspaceforces.com)

Learn about Polychlorinated Biphenyls | US EPA

Polychlorinated Biphenyls (PCBs) | Toxic Substances | Toxic Substance Portal | ATSDR (cdc.gov)

Polychlorinated Biphenyls (PCBs) in Building Materials | US EPA

Polychlorinated Biphenyl (PCB) carcinogenicity with special emphasis on airborne PCBs - PMC (nih.gov)

Polychlorinated Biphenyls in Residential Dust: Sources of Variability - PMC (nih.gov)

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