



2023 Secretary of Defense

Environmental Awards

Environmental Quality, Overseas Installation
Osan Air Base

Introduction

Osan Air Base (AB) is located in the Jinwi River plains in Gyeonggi-do (province) in the northwest portion of the Republic of Korea (ROK), about 33 miles south from Seoul and 48 miles south of the Korean Demilitarized Zone. Osan AB is home to the 51st Fighter Wing and several tenant units, including headquarters for the U.S. 7th Air Force, 731st Air Mobility Squadron, 5th Reconnaissance Squadron, and the U.S. Army 3rd Battlefield Coordination Detachment-Korea. As the most forward deployed permanently based wing in the Air Force, the 51st Fighter Wing is charged with providing mission-ready Airmen to execute combat operations and receive follow-on forces while defending and sustaining the base and its personnel.

Osan AB measures approximately 2.5 miles in the east-west direction and 1-mile in the north-south direction, occupying an area of about 2,020 acres. Major facilities on the installation include two 9,000-foot runways, fuel storage and delivery infrastructure, aircraft maintenance and service buildings, and administrative and support facilities worth \$5.3B. Osan AB also supports an 88-acre geographically separate unit with maintenance and administrative facilities about 2 miles from the main base.

Osan AB has a total working population of about 9,800 people, including military, Department of Defense (DoD) civilians and contractors, and a resident population of about 7,430 people. The Base is bordered to the east and southeast by the Songtan district of Pyeongtaek-si (City); to the north by the Jinwi

River; and agriculture land to the west, southwest, and northeast. The southern side of the installation is bordered by the Republic of Korea Air Force facilities, residential and commercial buildings, and farmlands.

Background

The 51st Civil Engineer Squadron's Environmental Element is responsible for Osan AB environmental stewardship managed through 13 Wing Environmental Programs. Its mission is to ensure Osan AB complies with applicable environmental laws and regulation by integrating environmental management and pollution prevention principles; providing training for Airmen and Civilians; and continuing to improve through assessments, root cause analysis, and implementation of corrective actions. The Environmental Element's vision is to create synergy through communication and collaboration to enhance Osan's mission, where the Environmental Element does not act solely as a regulating organization but as partners and advisors. The Environmental Element is comprised of three U.S. Civilians, three Local National Civilians, and three hazardous waste contractors. The staff maintains and implements eight installation-level management plans that reinforce procedures, best management practices, and operational controls of the environmental aspects into the installation's mission. These plans are (1) Stormwater Pollution Prevention Plan; (2) Spill Prevention Control and Countermeasure Plan; (3) Tank Management Plan; (4) Hazardous Materials Management Plan, (5) Hazardous Waste Management Plan; (6) Integrated Solid Waste Management Plan; (7) Integrated Natural Resources Management Plan; and (8) Integrated Cultural Resources Management Plan.

As a short tour overseas installation, turnover and continuity are the greatest challenges at Osan AB. These challenges are amplified by the fact that only about 5% of military authorizations are designated as command-sponsored two-year accompanied tours,

resulting in roughly 95% turnover annually. Furthermore, the Environmental office has also seen frequent turnover of its staff, often operating at 60% assigned manning. The office overcomes these challenges by pursuing its vision of communication, collaboration, and customer focus. At the heart of this vision is the Environmental Management System (EMS) consistent with the International Standards Organization 14001, *Environmental Management Systems*.

The 51st Fighter Wing Commander not only publicly states his/her commitment to environmental stewardship but also directs maximum participation of subordinate and tenant units through a standing Execute Order (EXORD). Osan AB actively supports the commander's EXORD by employing a robust Environmental, Safety, Occupational Health Council (ESOHC) chaired by the Wing Commander. The ESOHC engages a broad range of specialties and oversees several working groups including the EMS Cross-Functional Team (CFT), Hazardous Material Process Team, Petroleum, Oil and Lubricants (POL) CFT, Drinking Water Working Group, and Stormwater Pollution Prevention Team. These enduring working groups enhance continuity through regular communication and collaboration to address environmental concerns and support the EMS initiatives.

Osan AB's Environmental Significant Aspects, or challenges, are Water Quality, POL Storage Tanks, Air Quality and Toxics. These significant aspects are driven by an aging infrastructure, limited funding, personnel turnover, program management vacancies and changing/increased requirements.

Water Quality. Osan AB has 37 identified stormwater point sources associated with industrial activities. However, this number grows to 248 point sources when construction activities are taken into consideration. Osan AB owns the largest construction portfolio in the Pacific Air Force (PACAF) worth \$1.61B, consisting of 214 projects

annually. As a result, the Environmental Element must engage project planners, construction engineers, contracting officers, and construction inspectors to track and review construction Stormwater Pollution Prevention Plans and perform inspections to ensure compliance with the Korean Environmental Governing Standards (KEGS). Furthermore, Osan AB suffers from an aging infrastructure where the stormwater and sanitary sewer systems are inadequate for the increasing demand which results in localized flooding and periodic sanitary sewer overflows. As local Korean environmental laws mature, water quality has become a greater concern for the Host Nation.

POL Storage Tanks. Osan AB has over 300 POL storage tanks and has placed significant efforts and investment over the past 20 years to modernize the shop fabricated storage tank systems that are double-walled equipped with automatic gauging systems, underground fuel sumps, and sensors. While the systems meet all applicable industry standards, there was little to no coordination and planning to assess the functionality, reliability, and maintainability of the systems. The complex tank systems cannot be reliably or accurately inspected by facility users and Environmental Quality funds cannot be used to repair them.

Air Quality. Air Quality has gradually worsened in the Korean Peninsula and has become a high priority within the ROK resulting in new local laws that align closely to U.S. laws. Historically, regulatory requirements associated with Air Quality for U.S. Forces Korea (USFK) installations were minor with very few actionable requirements in the KEGS and Overseas Environmental Baseline Guidance Document (OEBGD). As a result, the Environmental Element placed its efforts into other priorities. In 2020, the OEBGD Air Quality requirements was substantially revised with actionable guidance and USFK Environmental Division has drafted a revision to the KEGS to align with

the OEBGD and local laws. With the new OEBGD and the concerns of the Host Nation, the Environmental Element is challenged with identifying how the new guidance will impact the Osan mission, how to integrate the new requirements, and building a new environmental media program.

Accomplishments

Environmental Management

Osan AB recognizes that environmental aspects cannot be managed unless they have been identified and quantified, and that an effective environmental program is interdependent on mission operations and the Airmen that carry them out. Osan AB currently maintains 100% trained and appointment rate of Unit Environmental Coordinators, 100% for Hazardous Material Monitors, and 92% for Hazardous Waste Accumulation Point Managers, which is the highest sustained rate in Osan AB history. The Environmental Office led and integrated these 150 environmental practitioners to assess the 4,000 processes supporting a \$206M Flight Hour Program, identifying and correcting 204 discrepancies.



Environmental Compliance Visit

The Osan Environmental Office partners with 150 environmental practitioners across the installation to integrate environmental requirements to sustain the mission.

Additionally, Osan AB published a Hazardous Materials Management Program (HMMP) and Hazard Communication (HAZCOM) EXORD

signed by the Wing Commander that directed the complete accountability of all hazardous materials, hazardous material using processes, and review of all HAZCOM Programs. At the conclusion of the EXORD, 413 unidentified hazardous materials using processes, 3,000 unaccounted materials, and the absence of 80 HAZCOM programs were identified across the installation. Through this effort, Osan AB has restored compliance for all 90 applicable work centers, as well as obtaining 100% accountability of all 6,000 hazardous materials and disposing of 40,000 lbs of expired or unnecessary hazardous materials. This in turn allowed Osan AB to accurately assess and inventory 2,300 processes, characterize 225 waste streams, reconcile 37 stormwater point sources, and monitor 29 air emission generating organizations.

Through the EXORD, Osan AB discovered a critical oversight in the Air Force guidance in how installations manage hazardous materials safely. The guidance failed to designate the Office of Primary Responsibility or Authority on regulating chemical compatibility and proper storage. During the fiscal year (FY) 22 Operational Readiness Inspection by the Air Force Inspector General (IG), Osan AB identified the inadequate guidance, resulting in the IG issuing a Major Finding against the Assistant Secretary of Air Force Installation and Environment. This finding resulted in Air Force Higher Headquarters collaboration to revise and publish updated HMMP and HAZCOM guidance.

As home to the largest construction portfolio in PACAF, consisting of 214 projects annually worth \$1.61B, the volume of construction activities creates a significant risk to stormwater quality and the environment. Prior to FY21, the Environmental Element did not track or manage construction activities, but have since developed a partnership with Engineering Planners, Designers, Inspectors, and end-users to ensure each construction project is thoroughly reviewed for

environmental impacts and that environmental requirements have been incorporated throughout the life cycle of each project. These reviews allowed the accountability of 9,500 hazardous materials associated with construction and prevented erosion and silting of the installation's stormwater system and infrastructure. This collaboration also drove Osan AB to program \$2M in funding for sanitary sewer system upgrades, \$2.5M for stormwater system upgrades and \$1.4M for storm ditch cleaning. The vital repairs will reduce the likelihood of sanitary sewer overflows, minimize localized flooding, and enhance the quality of local waters.



Construction Inspection

The Environmental Office partners with the Civil Engineering Office to ensure that over 200 annual construction projects conform to environmental requirements from start to finish.

Moreover, in FY 22, Osan AB experienced a break in the sole sanitary sewer force main with the potential to release over one million gallons of raw sewage into local Jinwi river. Osan AB immediately mobilized a 110-member spill response team to implement the Spill Prevention Control and Countermeasure Plan, quickly erecting three earthen dams in the adjacent storm ditch to control the release of the raw sewage allowing repair workers to locate the break and make repairs. After four days of response, the contained release was pumped back into the sanitary system and all impacted areas were disinfected. The event was reported to the ROK, USFK, and Air

Force Higher Headquarters, where it was praised by USFK Environmental Division for the rapid and creative actions taken to prevent the release of sewage to the Host Nation waters. The ability and willingness to surge manpower, equipment, and funds to respond to the spill event has bolstered the ROK Ministry of Environment's (MOE) confidence in Osan's spill response capabilities and commitment to the stewardship of the Host Nation's environment.



Break in Sanitary Sewer Main Repaired

Osan Environmental coordinated closely with the Operations Flight to contain the controlled release of one million gallons of raw sewage that allowed the necessary repair of the sewer main. The rapid and creative response actions, which was presided over by USFK and the ROK MOE, prevented the contamination of the adjacent Jinwi River.

Osan AB currently has an inventory of over 300 shop-fabricated double walled fuel storage tanks. Historically, fuel tanks were inspected by the tank users; however, due to the complexity of the tank design, these inspections have been inadequate to identify critical deficiencies and conduct necessary repairs. Additionally, Osan AB did not have an accurate inventory of storage tanks until FY21, when the Tank Program Manager inspected each facility to reconcile the tank inventory while also performing visual inspection on each tank found. With these survey results, Osan AB was able to execute \$2M in tank repairs and develop and execute a recurring maintenance and inspection

contract. This new maintenance contract ensured inspections are performed by licensed Steel Tank Institute Inspectors and has identified 154 potential deficiencies. Armed with this information, the Tank Program Manager acquired an additional \$4M for design and repair projects that will rectify a 15-year deficiency.



Tank Survey and Inspections

Osan AB manages over 300 fuel tanks. The Tank Program inspected and surveyed each tank to develop a comprehensive list of deficiencies to execute a \$2M repair contract and to advocate for an additional \$4M to make repairs to the critical infrastructure at Osan AB.

Finally, air quality has become an increasingly sensitive issue in Korean society, with the ROK being one of the world's wealthiest countries with the worst air pollution. As the DoD revised and bolstered the air quality requirements for overseas installation in the 2020 OEBGD, USFK Environmental Policy Division is substantially revising the KEGS Air Quality requirements. In response, Osan AB elevated the priority of the Air Quality Program and re-built it from the ground up. Armed with the list of the processes from the Hazardous Materials Program, the Air Quality Program manager inventoried and reconciled the 300 regulated air emission sources for tracking. This allowed the Air Quality Program Manager to implement the Ozone Depleting Substance (ODS) Program, which identifies and facilitates regulatory driven repairs for 80 ODS using equipment.

Effective Use of Funds

The most significant change to the Air Quality regulation in the OEBGD and the draft KEGS are the guidance on Reciprocating Internal Combustion Engines (RICE), which have not historically been managed or accurately inventoried at Osan AB. The Air Quality Program Manager, recognizing the substantial future impacts of the program, inventoried all 145 stationary RICE and entered 600 equipment specifications and air emissions standards into the system of record. These data points allow the Program Manager to determine regulation-driven operation and maintenance requirements, ensuring systems operate within established emission standards. This self-initiated effort saved the Air Force \$250K in contracts while also addressing an environmental significant aspect. Osan AB is the first USFK installation to have completed this inventory and regularly provides technical support to other USFK installation on meeting the new and emerging requirements.



RICE Survey

The Air Quality Program Manager inventoried all 145 stationary RICE and entered 600 equipment specifications and air emissions standards into the system of record.

Additionally, Osan AB suffered from a 10-year disposal backlog of 3,000 Collective Protection System filters due to the level of effort required to disassemble, demilitarize, and remove the hazardous waste component. The Solid Waste Program Manager negotiated with a scrap vendor to off-set the labor costs

to disassemble the units utilizing the recycling value of the scrap metal itself. This effort saved Osan AB 400-man hours and \$60K in disposal expenses.

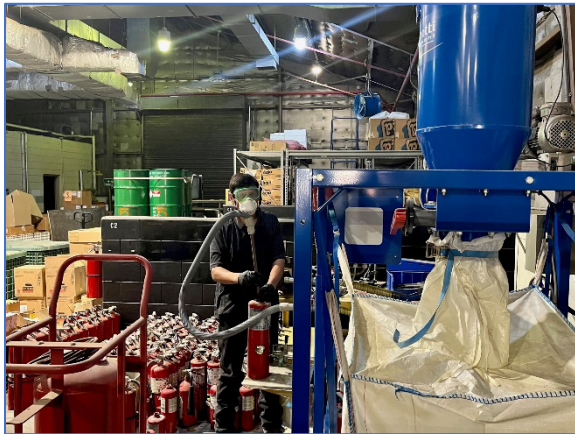
Waste Reduction Effort

In FY22, Osan AB's Air Quality Program Manager identified 30 unserviceable switchgears containing sulfur hexafluoride (SF6), which is considered the most potent greenhouse gas known to date. Because Osan AB was the first USFK installation to recognize and attempt to recover the SF6, the Defense Logistics Agency did not have a contract in place. Osan AB partnered with the local electric company to safely recover the SF6 for recycling, saving the Air Force \$267K in disposal costs. Once the SF6 was recovered from the switchgears, the units were recycled, diverting 10 tons of scrap metal that generated \$2.7K for the installation's quality of life programs.

Osan AB built a robust HMMP to manage material shelf life and institute a free-issue program. The Environmental Office has built a strong partnership with the Logistics Readiness Squadron to utilize the Enterprise Environmental Safety Occupational Health Management Information System and Defense Logistic Agency's Shelf-Life Extension System to track and maximize use of materials in shop accounts. This partnership was able to free issue and extend the shelf life of 3,000 materials, eliminating 39,000 lbs of waste and saving the Air Force \$39K in disposal expenses. Furthermore, the authorization of hazardous materials was revamped, identifying 1,600 tracking exemptions and freeing a combined 9,500 man-hours weekly across the installation.

Additionally, Osan AB struggled with servicing fire extinguishers due to lack of capable providers within the local economy, causing a significant waste stream of expired extinguishers. To mitigate this issue, the Pollution Prevention team worked to procure a firefighting power recovery system,

alleviating a 4-year back log of 516 extinguishers, recycling 8,000 lbs of scrap metal, and saving the Air Force \$60K in disposal cost.



Extinguisher Powder Recover

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Due to the parking space limitations on Osan AB, the installation has a limitation on private vehicles. With the recent surge of lithium-ion battery powered personal transportation devices (PTDs) in 2018, Airmen have become dependent on them for transportation. The batteries for these devices have a finite service life of 2 years and pose a significant fire hazard risk that has caused 8 fires in FY21-22, resulting in \$200K in fire damage. To combat this issue, Osan AB established an installation-wide battery recycling program, which has collected 55,000 tons of batteries and unserviceable PTDs and earned \$44K for the installation to date.

Community Relations

USFK and Osan AB have an initiative to make Korea the “Assignment of Choice” through enriching its command sponsorship program and modernizing its support infrastructure for 1,000 accompanied families. Each year, the Environmental Element partners with the Boy Scouts and Elementary Schools to host an Arbor Day event with volunteer opportunities. This past year, 100 participants planted 150 bushes and 30 native trees, beautifying

newly constructed and recreational areas across the installation.

Furthermore, the Natural Resources Program Manager thoroughly reviewed construction projects to identify potential vegetation that could be replanted. This has allowed the transplantation of 250 trees and 150 bushes in high visibility locations that saved \$300K in landscaping costs. Similarly, Osan AB built a new community park utilizing \$75K in recycling-generated funding. This park was constructed in two months, enhancing quality of life for Osan’s 12,000 inhabitants.

Lastly, Osan AB was selected to represent the 7th Air Force at the Environmental Joint Working Group (EJWG) hosted by USFK’s Environmental Policy Division and ROK’s Ministry of Defense (MND) and MOE. Osan AB used this opportunity to collaborate with Host Nation partners and build a foundation of trust, by communicating how the Air Force manages various environmental programs and its guiding principles, as a result Osan AB was selected by USFK to host a delegation of MOE and MND to showcase how USFK installations manages its environmental programs. USFK credits the timely transfer of five, previously stalled, mission critical land parcels, to the transparency and trust built by the EJWG and Osan AB, thereby enhancing the U.S.-ROK alliance and the Indo-Pacific Command Mission.



2022 Republic of Korea-U.S. EJWG Conference
Osan AB represented the 7th Air Force at the EJWG that works to build trust between USFK and the ROK.