

SUCCESS STORY

Fairchild AFB - JULY 2001



PRO-ACT

A Base-level Pollution Prevention Resource sponsored by HQ Air Force Center for Environmental Excellence



Spotlight On: Fairchild AFB

Fairchild Air Force Base (AFB), located west of Spokane, Washington, occupies approximately 4,500 acres and has permitted use of an additional 980,000 acres for survival training. The Air Mobility Command (AMC) base is home to "Super Tanker" operation of the 92nd Air Refueling Wing, the Air Force Survival School, 336th Training Group; 141st Air Refueling Wing; and 2nd Support Squadron. Maintaining environmental excellence and stewardship has been the ongoing focus for the base. In recognition for their environmental commitment, Fairchild AFB has been awarded the:

- 🏆 2001 White House Closing the Circle Award
- 🏆 2000 AMC General Thomas D. White Award for Pollution Prevention
- 🏆 2000 AMC Thomas D. White Award for Cultural Resources Management
- 🏆 2000 Washington State Governor's Award for Continued Excellence in Pollution Prevention
- 🏆 2000 Building an Environmentally Sustainable Tomorrow (BEST), Success Award
- 🏆 2000 Tree City USA Award and 2000 Tree City USA Growth Award
- 🏆 1999 General Thomas D. White Award for Environmental Quality

Environmental Mission

The 92nd Civil Engineer Squadron, Environmental Flight (CES/CEV), believes educating base personnel regarding environmental compliance, preservation, and recycling is a proven method of incorporating environmental excellence into the mission. The team attributes the success of the program to the integration of environmental stewardship and responsibility into each officer,

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enlisted person, civilian, and resident performing service or using base facilities. Environmental education begins with an orientation session for newcomers to relate the importance of environmental diligence and inform them of the base's environmental efforts and programs. In addition, the Environmental Flight developed and maintains an Internet and Intranet web site for continuing environmental education. The Intranet site includes all base environmental plans, newsletters, training opportunities, and updates.

To achieve the wing goal of "leading the civilian and military community in environmental excellence," the 92nd CES/CEV established two strategies: reduce environmental pollutants and increase recycling. In order to accomplish these strategies, the team committed to pursuing the following environmental mission objectives:

- Maintain regulatory compliance with federal, state, and local environmental standards
- Implement a comprehensive Environmental Compliance Assessment and Management Program
- Implement the Air Force's Pollution Prevention Program to reduce, reuse, and recycle

Due to the efforts of Fairchild AFB's dynamic environmental program, managed by the 92nd Air Refueling Wing Environmental Protection Committee (EPC), the base has achieved over a 90 percent reduction in environmental pollutants and a 30-plus percentage increase in recycling. Discussed within the following pages are highlights of the 92nd CES/CEV team's environmental achievements.

Recycling Efforts

Recycling has proven to be an economical and environmentally friendly way for Fairchild AFB to manage solid waste. The base has an extremely successful recycling program educating base personnel on the benefits of affirmative procurement and recycling. The team's aggressive pursuit of using and purchasing products containing recycled material is a full-circle approach to recycling.

Recycling Center

Recycling awareness is the most important component to the Recycling Center's program. The center provides each workplace with a small, 1.5-liter mini trash bin and a large recycling container to illustrate that most waste can be recycled. Offices and shops are also given paper recovery bags, cardboard collection containers, aluminum can crushers, and/or other recycling receptacles. Recycling containers have also been placed in base parks and dormitories. To encourage reuse as well as recycling, the Recycling Center maintains a household-product exchange shelf, where base residents can turn in unused or partially used household chemical items. These items are screened and then reissued to other customers, eliminating a solid waste.

The center serves the main base with weekly pick up of recycled material at all work centers. Employees and residents have the convenience of a 24-hour-a-day drive-through recycling drop-off point for a wide variety of recyclable materials,

and over 1,300 housing units are provided with curbside recycling and compost pickup. Each collected waste stream is analyzed to ensure maximum waste prevention, reduction, and recycling opportunities are considered. Money gained from the base's recycling efforts is used to offset equipment and operational costs of the center. As a result, over 30 percent of Fairchild AFB's solid wastes have been diverted by the Recycling Center.

Full-Circle Approach

The transportation shop leads the base in selecting and purchasing products containing recycled material. Using a full-circle approach, the shop not only purchases and uses recycled oil and antifreeze, but also reclaims these items when they are no longer of service. The used oil is reclaimed, at no cost to the base, for use as fuel in ships, while used antifreeze is picked up by a local company for recycling. Another example of reutilization, within transportation, is the recapping of used tires. Tires that are not recapped are recycled for use as filler material.

Pollution Prevention

Initiatives

Pollution prevention (P2) is a prominent part of the base's environmental program and is integrated into all base operations. Leading the way in implementing these measures is the base's Hazardous Materials (HAZMAT) Pharmacy, which utilizes the Air Force Environmental Management Information System (AF-EMIS) streamlined process for authorizing, ordering and tracking materials.

HAZMAT PROCESS

A new state-of-the-art HAZMAT Pharmacy facility was built in 1995/1996 and so impressed state regulators, the base was asked to participate in a state training workshop for Washington Department of Ecology employees regarding HAZMAT management systems. Not only did

the base assist the training contractor in compiling information for the workshop, but base personnel also attended the workshop to facilitate the transfer of information. In 1999, Fairchild AFB became the first AMC base to privatize their HAZMAT Pharmacy; at the same time, the base implemented the AF-EMIS electronic authorization process. This transition required a huge team effort from all organizations on base that use or deal with HAZMAT. As a result, customers' requests for HAZMAT authorizations are completed electronically, resulting in decreased manpower hours and processing time. Strict procedures are required for base personnel using HAZMAT items. Each organization is required to review all products containing hazardous chemicals to ensure the chemical ordered is the least hazardous, or a nontoxic suitable substitute does not exist. Before a new product containing an EPA Toxic 17 chemical can be added to an organization's authorized chemical usage list, the organization must prove the product is essential to their mission. Written approval is then required from the pollution prevention subcommittee chairman, and a final search for substitutes must be submitted as a technical inquiry to PRO-ACT. This comprehensive procedure resulted in a 90 percent reduction in the use of EPA Toxic 17 chemicals.

Hazardous Waste Reduction

Several P2 innovations to reduce and eliminate hazardous waste production were implemented within aircraft maintenance and repair activities resulting in a 90 percent reduction of hazardous waste.

- *Polyurethane* is a large source of hazardous waste from aircraft painting. The 92nd Maintenance Squadron Equipment Excellence Element replaced masking paper with sheet metal templates and tarps. Paper is reused as much as possible, resulting in a significant decrease in the amount of polyurethane waste associated with aircraft painting activities. In addition, the base is evaluating the purchase of a barrel compressor to condense the polyurethane paper waste, which will further reduce disposal costs.
- *Glass and Plastic Blast Media*, used by the Structural Maintenance Element generates 4,700 pounds of waste (spent) media annually. Fairchild AFB negotiated with the supplier of these materials and arranged a "buy and give back" procedure. The supplier, while delivering new material to the shop, picks up the spent glass and plastic media for recycling. The manufacturer recycles the spent blast media for use as a substrate in kitchen/bath counter tops. The elimination of this waste stream was implemented at a slight overall cost, but reduced hazardous waste generation by 4,700 pounds annually.
- *Parts Washers* normally use hydrocarbon-based solvents. To reduce the amount of waste generated the base converted to jet parts washers, extending the life of the water used and reducing the need for solvents. For parts washers that could not be converted, the base uses only "environmentally friendly" solvents meeting specified requirements, and installed some microbial parts washers to eliminate hazardous waste.
- *Solvents* are used in a variety of aircraft maintenance and painting operations, primarily in cleaning paint guns. In order to reduce this waste stream, the base invested in solvent recovery units. The units are able to recover/reclaim over 80 percent of the solvent used in cleaning.
- *Paint Booth* modification, which drastically reduced hazardous waste generation, involved the replacement of a water filter to a particulate filter. This modification reduced a waste stream from seventeen 55-gallon drums of contaminated water to eight 55-gallon drums of dry filters annually.

➤ *Batteries* are used in large amounts in a variety of base operations. Fairchild AFB implemented an initiative to replace all disposable batteries with rechargeable batteries. The initiative is mainly focused on alkaline batteries used in flashlights and power tools such as drills, which can operate off the same type rechargeable battery, giving the battery a dual purpose. Although the initial price of purchasing a rechargeable battery is higher, the rechargeable battery initiative has the potential to eliminate an entire waste stream. After being tested with great success in the Equipment Excellence Element, the program is expected to expand to other flight line maintenance activities in the future.

➤ *JP-8 Fuel Filters* are used to remove foreign particles from fuel as it is transferred from aircraft refueling trucks and bulk storage. The filters must be changed every three years, if not earlier, generating hundreds of waste filters and costing the base \$32 per filter for disposal (disposal cost is estimated based on poundage). In 2000, Fairchild AFB began a fuel filter recycling program, in which all used JP-8 filters are recycled. To date, the base has completely eliminated this waste stream, recycled over 350 filters, costing only \$12 per filter saving the base over \$7,000.

➤ *Photographic Waste*, Fairchild AFB embarked on several P2 innovations to reduce and eliminate hazardous waste production, such as investing in digital cameras and installing a silver recovery system. Over an 8-month period, the digital cameras and silver recovery system has eliminated an estimated 2,700 pounds of waste from disposal.

Herbicide Reduction

Another successful P2 initiative was implemented for pesticide operations. Fairchild AFB has 2,536,321 square yards of airfield pavements, 87

miles of roads, and 13 miles of running trails and sidewalks, all which are susceptible to “crack grass.” To meet a 50 percent herbicide reduction goal Fairchild AFB, implemented both biological and mechanical controls to successfully reduce herbicide usage. To further reduce the usage of herbicides, the base evaluated several new technologies and decided to purchase the Weed Seeker system. This innovative system is composed of ten weed seeker sensors that only spray where chlorophyll is detected, essentially eliminating over spray.



Weed Seeker

Installation Restoration Program

The Fairchild AFB restoration program consists of 39 sites and is on track to have all remedial sites finished by 2005, nine years ahead of the Air Force goal! This aggressive remediation strategy to restore soil and groundwater contaminated with cleaning solvents, metals, and petroleum derivatives requires close working relations with regulators and the local community. The restoration activity at Fairchild AFB is assisted by the Restoration Advisory Board (RAB), and is the only joint RAB in AMC between a base and an ANG unit. The RAB is also planning to

bring the Formerly Used Defense Sites (FUDS) cleanup program into their meetings, which will be another first for any RAB in the country. Many contaminated sites on Fairchild AFB are being remediated through pump and treat, air sparging, bioventing, and free product recovery systems. At one of these sites, a suspected source of contamination was discovered and removed within two weeks. Fairchild AFB removed 30 buried drums containing 800 gallons of hazardous waste before it leached into the groundwater table, and the site's ongoing pump and treat facility could be closed out years ahead of schedule, saving hundred of thousands of dollars in operating costs due to this source removal.



Site Cleanup

The base will soon implement one of the Air Forces' first phytoremediation projects. The team partnered with the Air Force Center for Environmental Excellence (AFCEE) to evaluate the effectiveness of groundwater remediation with poplar trees. The project is intended to evaluate

phytoremediation as a cleanup method for a shallow TCE-contaminated aquifer. Poplar trees have been planted above the plume and, as the contaminants flow through the aquifer, they will be drawn up through the root system, preventing the contaminants from reaching environmentally sensitive areas. The initial tree planting took place on Arbor Day 2001 and involved planting an acre of 2 to 3-foot trees. The site may eventually involve planting trees over 10 acres.

Finally, the Fairchild AFB cleanup team just finished their first 5-year review, which includes cleanup milestones for the next five years. EPA Region X regulators have provided this report as the model document to other bases who are starting their 5-year reviews. For more information, visit the cleanup web site: <http://www.fairchild.af.mil/CESENVIR/era.htm> and <http://www.fairchild.af.mil/CESENVIR/cevhome.htm>.

Underground Storage Tanks

All inactive and/or unnecessary underground storage tanks (USTs) at Fairchild AFB have been removed, and the majority of these sites are officially closed. Investigation and remediation are ongoing at a couple of removal sites, with official closure being a reasonable goal for the near future. Essential tanks were upgraded or replaced with systems compliant with Washington State regulations, and are equipped with state-of-the-art leakage monitoring equipment. The base manages 45 regulated tanks that are monitored on a 24-hour basis. Detailed engineering drawings of each tank system and associated equipment are kept on site. If a leak is detected, an alarm automatically transmits a call to Petroleum Data Services, which then directs a local tank service representative to the base to assess the problem. Aside from providing immediate response, the service provides the base with third-party verification of tank status and monthly compliance reports, saving military man-hours. One hundred percent compliance is now provided at half the cost.

Natural Resource Conservation

Fairchild AFB has an aggressive natural resource conservation program, that not only conserves the base's resources, but also enhancing wildlife areas through replanting and reforestation of native species.

Nature Trail

The base constructed an educational nature trail within a wetlands area, containing a variety of wildlife, including pheasants, deer, and hawks. Local Boy Scouts assisted the 92nd Civil Engineer Squadron in trail development by clearing undergrowth and removing branches. In addition, the scouts built benches and picnic tables, and also placed plant identification markers used in conjunction with an educational brochure developed by the base. The nature trail is an outstanding area for children as well as adults to view wildlife in their natural habitat, identify plant species, and learn about the geography of the area. The trail is handicap accessible and is available for use year round. The base recently obtained equipment enabling the trail to be used in the winter for cross-country skiing.



Nature Trail Marker

Falconry

In 1996, Fairchild AFB implemented a falconry program to keep the flight line clear of birds. A contractor supplies the falcons, which establish and defend their territory against other birds, essentially “chasing” them away. In addition to falcons, the base utilize truck-mounted and stationary cannons and placed netting over pond areas to further reduce bird aircraft strike hazard. The falconry program, along with best management practices such as maintaining grass at a certain height, has an added benefit by reducing pesticides once used to eliminate insects and rodents that attract birds. The success of the program speaks for itself. Since its inception three years ago, the base has not had a single aircraft damaged by birds.

Biological Control

The vast areas of undeveloped land on the base can be a prime habitat for noxious weeds that could jeopardize nearby wheat farms. State and county laws mandate landowners control noxious weeds in order to inhibit spread. To comply with these laws, Fairchild AFB implemented the largest successful biological weed control program in the state of Washington and became a DoD leader in aggressive implementation of this approach. Fairchild AFB uses biological control, the intentional use of living organisms to reduce the population of a pest, to control the weeds. The base teamed with a Washington State University extension entomologist, the U. S. Department of Agriculture Animal and Health Inspections Service, and the Spokane County Noxious Weed Control Board to evaluate biological control agents to control the Canada Thistle, Musk Thistle, Knapweed, and Rush Skeletonweed. These weeds are considered noxious because they have no naturally occurring enemies and are extremely aggressive in killing native vegetation as they invade the land. The carefully selected agents used by Fairchild AFB include a variety of gallflies and weevil, which resulted in an estimated 40 percent reduction in herbicide use.

Airfield Deicing Operations

Fairchild AFB receives snow and freezing rain five months of the year. Due to this inclement winter weather, the base developed and implemented snow and ice control measures that have won the base several awards and recognition. In addition to seeking methods to reduce the use of deicing and antiicing chemicals, Fairchild AFB is actively investigating the fate of these chemicals in the environment and their impact on groundwater and soil.

Snow Removal

Maintaining and ensuring road and runway safety during winter weather is the mission of the base's snow team. The team actively seeks new chemicals and mechanical technologies to reduce the amount of deicing and antiicing chemicals used. In addition to switching to "environmentally friendly" deicers, the base is able to reduce the amount of chemicals used by implementing mechanical control measures first. Chemical usage was reduced 30 percent by grooving the runway, allowing water to drain quicker thereby decreasing the freezing potential. To further reduce the amount of deicing chemicals utilized, the base recently invested in new equipment: the H-Series high-speed reversible plow trucks (an initiative developed by the Air Force Civil Engineer Support Agency); a dedicated H-Series snow broom truck; and the Snow & Ice Control (SNIC) system. The new plows increased efficiency and performance by 40 percent, while the SNIC enabled the snow team to pinpoint critical areas on the runway requiring deicing.

The SNIC system is in its first year of operation at Fairchild AFB and includes the use of a friction tester and temperature sensor to optimize the use of deicing chemicals. The SNIC system is an information management system in which a global positioning system is used to accurately record data collected from the friction tester and

temperature sensor. The system relays data to the vehicle systems operator which is simultaneously relayed to the "snow barn," the main office building. The data is displayed on a site specific airfield map, enabling the snow team to determine where and how much deicing is required. The SNIC system is estimated to reduce deicing chemical usage up to 40 percent by precisely applying the minimum amount of chemicals necessary.



SNIC Unit

Storm Water

Fairchild AFB has five storm water drainage basins regulated under the conditions of the EPA multi-sector general permit. Storm water in the primary drainage basin, containing the flight line and the majority of the base maintenance facilities, passes through two baffled holding ponds that are operated in a series to maximize detention time. These ponds provide sedimentation along with some natural biological/chemical treatment, and have discharge structures providing emergency retention of any fuel or oil spill occurring on the flight line. The base has a storm water management plan used to model storm events and provides valuable data for managing flow under varying conditions. This plan was developed in conjunction with a storm water management design criteria manual that provides standards for engineering design of base storm water facilities.

As is the case with pavement deicer, the base also implemented best management practices for the control of aircraft deicer chemicals. In order to

meet the “no-discharge under dry weather conditions” provision of the multi-sector permit, the base installed 25 storm water inlet valves prohibiting any flow from entering the storm water system. These flow restrictors allow the removal of the deicer liquid with a vehicle using a squeegee and 6-pounds-per-square-inch vacuum to capture excess fluid. The propylene glycol-based deicer is then properly disposed through recycling and/or treatment. This initiative allows aircraft to be deiced anywhere in the flight line area. The base is also studying the potential impact of deicer runoff on the soil and groundwater systems at various locations around the flight line. This is made possible through a contract effort with the Huxley College of Environmental Studies at Western Washington University.

Environmental Warriors

The 92nd CES/CEV designed the “Environmental Warriors” program in order to build morale and acknowledge environmental achievements by base personnel. “Environmental Warriors” are individuals who have made a significant contribution to environmental programs outside their normal duties. The selection process involves nomination at the Environmental Flight’s monthly staff

meetings and a review of the individual’s accomplishments. Candidates are voted upon, and the deserving “warrior” is presented with the award, a monogrammed baseball hat, at commander’s call or another suitable forum. Recognition as an “Environmental Warrior” is not easily attained; to date, only 16 hats have been awarded. Although this recognition has only been presented to a few individuals, the Environmental Flight enthusiastically supports this initiative for all base personnel, realizing environmental accomplishments are due to the tremendous environmental efforts of all base personnel.

Fairchild AFB is committed to obtaining environmental excellence through implementing aggressive environmental initiatives, allocating resources necessary to procure new technology and information systems, and continual environmental education of personnel. The 92nd CES/CEV team is enthusiastic and committed to making Fairchild AFB an environmental leader within the community and the Air Force. For additional information on the environmental achievements at Fairchild AFB, contact the Environmental Flight, 92nd CES/CEV, at DSN 657-2313, or (509) 247-2313 or contact PRO-ACT for a specific point of contact, DSN 240-4240, or (800) 233-4356.

Pollution Prevention Success Stories - Fairchild AFB, July 2001

Success stories are a product of PRO-ACT, a service of the Environmental Quality Directorate, Headquarters Air Force Center for Environmental Excellence (HQ AFCEE/EQ), Brooks AFB, Texas. Any comments or suggestions are welcomed and should be directed to PRO-ACT at DSN 240-4240, (800) 233-4356, or pro-act@brooks.af.mil.



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