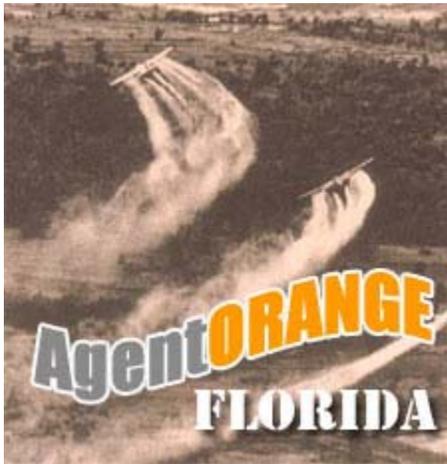


AIR FORCE ADMITS AGENT ORANGE SPRAYING IN FLORIDA IN 1962-70

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By Barbara T. Dreyfuss

In the 1960s, Ernie Rivers taught Navy flight students at the Pensacola Naval Air Station how to live off the land if their plane was downed. He was the officer in charge of the survival unit, overseeing 30 to 35 instructors, who taught more than 100 men a week how to survive with only a compass, map, and a hunting knife. Every week groups of students would camp for three days, using different sites on Eglin Air Force Base Reservation in Florida.

When the winds and clouds were right, Rivers and his men would watch planes pass overhead, clouds of spray coming from them. Several times he and his men were sprayed. “I’d say, ‘At least we don’t have to use bug repellent,’” he noted, laughing, during an interview. That was a big plus, they thought, for them as well as Army Rangers who were also training out in the bayous of the Florida panhandle, where mosquitoes and other bugs could make life miserable.

Rivers and the students thought they were watching the Air Force spray DDT to kill mosquitoes. What was actually being sprayed, he said, was Agent Orange. Documents show that gallons of the defoliants Agent Orange, Agent Purple, and Agent White were sprayed at Eglin. In fact, according to officials overseeing the program, the Air Force sprayed a test area on the base with more dioxin than any similar area in Vietnam. The fact that Agent Orange was sprayed in Florida for eight years was not widely known then or even today. Only in the last several years has the documentation on the spraying been made publicly available by Alvin Young, an Air Force scientist for more than 15 years at Eglin. Young oversaw a huge research project evaluating how massive spraying of Agent Orange at the Florida air force base affected its soil, water, plants, fish, and animals.

In Vietnam during the war, a typical mission disseminated 14.8 kg of Agent Orange per hectare, according to Young. Most of the Agent Orange in Vietnam was intercepted by forest canopy, and some of it was destroyed by the sunlight. But at Eglin, where the spray rate was 876 kg per hectare, the trees and bushes already had been removed from the spray area. Young recently wrote that each hectare at Eglin received at least 1,300

times more dioxin than a hectare sprayed in Vietnam. The spraying went on from 1962 to 1970. The test area was three kilometers square.

Eglin was one of several key military installations involved with Operation Ranch Hand and posters plastering its buildings made that clear. Pictures of Smokey the Bear, the unofficial Operation Ranch Hand mascot, proclaimed, "Only you can prevent a forest." Eglin had responsibility for training the aircrews, fitting aircraft with spray equipment, and testing the spray systems and spray patterns.

Spray systems were tested in an area divided into four grids. From June 1962 through June 1970 fixed-wing airplanes, helicopters or jet aircraft sprayed massive amounts of defoliants on the area. During that time 75,000 liters of Agent Orange, 61,200 liters of Agent Purple, 15,800 liters of Agent White, and 16,600 liters of Agent Blue rained onto the base.

There were 155,000 kg sprayed of the active ingredients in the herbicides. The Air Force estimated that the amount of dioxin sprayed was between 5.6 and eight pounds, an enormous amount since it is one of the more toxic chemicals, even in minute amounts. Because of its toxicity, dioxin is generally measured in parts per trillion.

In the late 1960s, Air Force officials became concerned about the ramifications of spraying dioxin in massive amounts stateside. "After repetitive applications, personnel involved with the test program expressed concern about potential ecological and environmental hazards that might be associated with continuance of these test programs," Young wrote later in an Air Force technical report.

Officials overseeing the test program knew how toxic Agent Orange was but seemed unconcerned, so long as it was used in Vietnam. James Clary, who worked at Eglin and helped design the spray system for herbicides, wrote in a 1988 letter to then-Sen. Tom Daschle: "When we [military scientists] initiated the herbicide program in the 1960s, we were aware of the potential for damage due to dioxin contamination in the herbicide. We were even aware that the 'military' formulation had a higher dioxin concentration than the 'civilian' version due to the lower cost and speed of manufacture. However, because the material was to be used on the 'enemy,' none of us were overly concerned."

But when it started to be sprayed in enormous quantities on an American base, some Air Force officials became concerned and wanted to study the impact of the spraying. Their concern doesn't seem to have been motivated only by worry about ecological and public health issues.

In fact, it seems to have been in part triggered by worry that the government could be liable for damages caused by the spraying. Internal Air Force memos show that the government was being sued by farmers who believed their crops had been decimated by the spraying. The military was interested in disproving the farmers' claims, by studying if Agent Orange traveled in the air when sprayed and how it affected area plants and animals.

A memo from an Air Force chemical engineer in June 1968 explained that personnel were investigating a neutron activation tracer to see if it could determine whether defoliants traveled when sprayed and, if so, where they went. "The Air Force is vitally concerned with potential hazards to local flora, fauna, and marine life, both on and off the Eglin Reservation that might be created by defoliant testing," he wrote. "This concern is primarily the result of pending legal action against the government by cotton farmers of a surrounding county claiming damage to their cotton fields due to previous defoliant testing at Eglin."

To study the ramifications of the spraying, the Air Force in 1968 created a research unit at Eglin of more than a dozen Air University graduates with doctorates in such areas as chemistry, microbiology, plant science, and zoology. They worked for at least four years, and six of the scientists, including Alvin Young who became lead investigator, stayed at Eglin for the entire 15 years of the study.

In what would be considered a conflict of interest today, they were assisted by contractors from Dow Chemical Company, one of the manufacturers of the herbicides. Dow, which was ultimately sued over Agent Orange, had a significant stake in whether or not the chemicals were found to cause serious harm to plants, animals, or people. A U.S. Air Force Academy research director asked that scientists be brought from Dow, claiming they were the "best qualified to recognize and access the ecological effects caused by these materials."

The first study of the impact of Agent Orange at Eglin began in late summer of 1969, when six five-foot cores of dirt were randomly taken from the test area. They indicated "significant concentrations of herbicides" and scientists found toxins leaching up to three feet into the soil," Young wrote. In 1974, "relatively high" levels of dioxin, 1,500 parts per trillion, were found in the test area.

An ecological survey, conducted from 1973 to 1978, found dioxin in nine animal species on the reservation, including mice, rats, three types of birds, and three types of fish. Spiders, crickets, and grubs also tested positive. In the fifteen years of study at Eglin, dioxin was found in about

one-third of the different species studied. The levels of the toxin were about the same as that found at the time in the soil.

In 1984, fourteen years after Agent Orange was last sprayed at Eglin, Young's team concluded that about one percent of the dioxin remained on the test area. While some of it was destroyed by sunlight, Young acknowledged that "wind and water erosion" also led to its disappearance from the site, but he did not study where it might have traveled to in the surrounding area.

The spray area was not the only place at Eglin affected by the herbicides. There were storage, disposal, and loading sites as well, and the Air Force concluded in 1992 there were nine locations associated with Agent Orange at the base, in addition to the spray areas. These included the Mullet Creek Drum Disposal Site, the Hardstand 7 disposal area, Receiver Landfill, Upper Memorial Lake, three sites at Lower Memorial Lake and Field No. 2 Drum Disposal, and Field No. 2 Helicopter Loading Area.

Mullet Creek Drum Disposal Site had more than 660 drums in it when the Air Force removed them in 1988. And 120 cubic yards of debris also were taken out.

Another disposal site, Upper Memorial Lake Landfill, which is about half a mile from the Eglin Main Base residential area next to Upper Memorial Lake, and a quarter mile south of the runways, had an estimated 150 drums used for herbicides buried there.

On the west side of the north-south runway was another disposal site, Hardstand 7, which also was a 40-meter circular concrete and asphalt aircraft parking and loading area. It included a 15-foot-deep pit near the center of the concrete pad where herbicide drums were stored and transferred to aircraft. In 1980, dioxin-contaminated soil was removed from Hardstand 7 and temporarily stored at the Receiver Area Landfill, and then was spread over the spray area. At least as late as 1992, the Air Force found contamination at the Upper Memorial Lake Landfill and at the Hardstand 7 site.

An additional 260 feet of contaminated soil also was stored, briefly, at Hardfill 01. And there was an alternate Agent Orange loading area at Hardstand 8. In addition, helicopters were loaded with herbicides at Field No. 2.

Eglin Air Force Base is huge and largely undeveloped, and the test and storage areas are in a rural area in the southeast section of the reservation, but they don't exist in a vacuum. Creeks flow through the area, ponds are nearby, residential areas abut some of the sites. The area is about three

miles north of Choctawhatchee Bay and eight miles east of Niceville, Florida.

Eglin Main Base employs about 15,000 workers today and the airfield an additional 6,000. Much of the base is open to the general public for recreation. Ponds near the disposal and spray areas drain into creeks that flow into nearby bayous. Mullet, Trout, and Basin Creek receive runoff surface water from the test area and disposal sites and drain into Choctawhatchee Bay.

For many years, the Air Force did little to contain wind and water erosion of the contaminated sites. A 1981 memo advised Eglin's commanding general that he only had to follow "minimal recommendations" to prevent erosion, even in the southern half of the spray areas, which was particularly susceptible to erosion. He was advised mainly to limit off-road vehicles.

"I feel that when these minimal recommendations are placed into effect, the Air Force will have made a significant and prudent move toward preventing the unwanted future movement of TCCD-contaminated soil, particularly the movement toward Choctawhatchee Bay," Major General John Ord, then commander of the Air Force Systems Command's Aerospace Medical Division at Brooks Air Force Base, wrote.

But in fact, dioxin traveled into ponds and streams, was carried by the wind, was absorbed by fish, and found its way into areas used for recreational fishing and swimming. In 1978, Young's group studied dioxin levels at Hardstand 7 and found concentrations as high as 275 parts per billion and contamination up to a third of that down into the dirt one meter deep. They found it had migrated as far downstream as Tom's Pond, concluding that much of the contamination occurred before a dike was built. Still, it took until 1985 for the site to be closed off with a chain-link fence and locked gates, and signs posted to prevent trespassing and fishing.

And it took four more years after the Air Force's 1992 assessment that there was still contamination at the site for efforts at embankment stabilization, drum excavation, and drain pit excavation. In 2001, the Air Force installed three erosion control structures to reduce erosion around the hardstand and to minimize storm water run-off into Hardstand Pond. In addition, an asphalt cap was installed over contaminated areas of Handstand 7, and the existing storm water pipe was checked for blockage.

Similarly, at Upper Memorial Lake Landfill, soil samples taken in 1992 indicated trace levels of dioxin. The next year Eglin officials collected eight soil samples at the lake itself and found evidence of dioxin in it, as well as

in fish caught there. But it was not until 1998 that erosion control and other actions were taken.

Because water from the spray areas and drum disposal site flows into Mullet, Trout, and Basin Creeks, which flow into Choctawhatchee Bay, the Air Force tested for dioxins, furans, and other contaminants in the creeks in the 1990s and found them in the surface water, sediment, and fish.

By 1998 enough concern had been raised about the health impact of the Agent Orange spraying and disposal sites that the Agency for Toxic Substances and Disease Registry agreed to do a public-health assessment of Eglin Air Force Base. They concluded, in a report released in 2003, that although there were contaminated land and water areas in the Eglin spray areas, the amount of contamination was very low and the use of the areas by the public was so low, there was little danger posed to the public.

But, what the study didn't assess was the health risk to the Air Force personnel who flew the planes or loaded the drums onto them, or stored them at the disposal site, or later removed them. And it didn't look at whether any of Ernie Rivers' flight students or the Army Rangers, who were living off the land, drinking its rivers, and sleeping on earth dampened by Agent Orange were put at risk.