My name is **********, and I have been stationed at ********** for more than 15 years. For many of those, the hangar-bird problem has been someone else's problem - one I've been forced to endure but could do little about. Now that I've been stationed in Quality Assurance, it's been brought to my attention that I might have the ability to do something about it.

The problems: Ever since the invention of the airplane hangar, birds have roosted in the rafters. There are a variety of problems stemming from bird populations in enclosed spaces. The problems arise when their population begins to affect the day-to-day operations of aircraft maintenance. Birds have been defined as “pests” in accordance with AFI 32-1074, page 17, “that adversely affect readiness, military operations, or the well-being of personnel and animals; attack or damage real property, supplies, equipment, or vegetation; or are otherwise undesirable.”

Problem #1: Morale. The constant presence of birds overhead, defecating on our workers, have become a constant source of irritation to our aircraft maintainers (I have attached a picture of the disgusting results to this email). In the words of our Maintenance Squadron Superintendent, SMSgt *******, "...there would be pictures of my guys with bird feces on them, but they went and cleaned themselves up immediately." The best example he used occurred during the mock boards performed to prepare their airmen for the upcoming BTZ boards, when he stated that the *one* thing the airmen would change about air base was "...the bird problem in our hangar." It was a shocking moment to learn that it affected them so profoundly. More than better tools, better deployment situations, etc., they wanted a work environment in which they did not have to worry about getting defecated upon every minute of their working day.

This photograph was taken on 23 Aug 2012 in air base, hangar 1***. Two people were defecated upon, as well (not pictured).

Problem #2: Health. I am sure that I do not have to list all of the diseases that bird feces carry and impart onto humans that breathe the fumes. There have been many times that I have personally avoided areas of these hangars because of the overwhelming stench of the birds' leavings. These areas have had to be continuously cleaned in order to maintain a healthy work environment, which stretches to the limit work centers that are already spread extremely thin because of increased workload and decreased manning.

Problem #3: The negative impression. This continuing situation and the lack of a solution for it consistently spreads an unfortunate and untrue impression: that the Air Force does not care enough about its people to provide professional and healthy work environments in which for them to work. This has a very real affect on retention rates.

Problem #4: The negative effects of droppings on equipment. At ***airbase*** AFB, we house the oldest aircraft in the Air Force inventory: the KC-135. Its longevity is vital to the U.S. mission and global reach. Bird droppings are extremely acidic – so much so that they can penetrate past protective coatings and eat away at the metal. Not only aircraft are affected by these acidic droppings – metal ductworks that carry HVAC throughout our hangars are susceptible to damage, as well.

Attempted solutions: I know that, through the years, there have been many attempts to thwart the bird population in our hangars, all with minimal success. The base has tried everything including netting, real predators (falcons and dogs), and fake predators (blow-up owls and foam-rubber birds of prey). The birds eventually realize that the netting can be destroyed and overcome, the falcons and dogs either don't live there permanently or can't hurt them, and the fake predators don't pose any threat.

Building a permanent solution: In order for us to solve this dilemma, many steps will have to be taken. There must be a short-term solution as well as a long-term solution. In the short term, the birds must be made to leave the hangar. Then, a long-term solution must be implemented that keeps the birds away.

Short term: Many solutions have occurred to many people – solutions from pellet guns to poison to snakes (yes, snakes). Regardless of the solution that is implemented, safety and adherence to regulations are paramount, which eliminates all of these from contention.

Long term: The most efficient manner of keeping birds from roosting in the rafters would be to line the underside of every possible surface with durable netting that could withstand any avian attempt at breaking through it. The endeavor was undertaken a few years ago, but the material used in the netting was substandard and as soon thwarted by the birds. The base attempted to attain a quote to re-accomplish this effort, but vendors were reluctant to do so, in fear of putting forth the effort, giving a quote, and getting beat on price. In this economy, no one is willing to waste time on something that is not a sure thing. The one quote the base did receive was an estimate close to $480,000, which the base was very reluctant to pay.

Possible solution: While researching an alternative (certain poisons came to mind), I discovered a company that had found a safe way to rid an area of birds, particularly pigeons and starlings. The company was BirdBuffer. The first thing that caught my eye on their website was a link to a television news story, an in-depth accounting of their product in use in an open-air Costco market. This showed the use of their product and claimed it was a "harmless" method to controlling bird populations, even in open spaces. Their website further claimed it was in use in areas such as industrial areas, loading docks, retail entrances, stadiums, outdoor food markets, open air malls, warehouses, restaurants, big box retailers, airplane hangars, open air malls, and hotel patios. There was even a testimonial page from another Air Force Base and Learjet, who had purchased units for their hangars and put them to use. Later, I discovered that the Pentagon itself uses this product to keep its center foliage area clear of birds. Their droppings contain seeds, which causes growth of foreign plants inside of their carefully protected area.

After some research, I discovered the product was basically a Hollywood fog machine that vaporized a chemical called Rejex-it® used in food production (grape food flavoring – it is actually derived from the skin of grapes) and dispersed it into the air. Birds that fly through the substance (they must be flying and breathing hard enough to receive enough of the product to react at all) react to a stimulation of a special nerve in their mucus membranes called the "trigeminal nerve". This reaction causes a repelling sensation but does not harm the birds. Studies conducted over the course of weeks discovered that it was so not harmful that it does not affect birds even as they nest. The only effects the birds feel is during flight. As the nesting instinct is in effect, nesting birds will stay in the area that is affected by the substance until their squabs are old enough to fly. When they are old enough, they all leave together. Their time within the affected area causes no harm to them whatsoever.

I contacted the company to further research the product, receiving estimates for the unit, the MSDS for the substance, the specimen label, and pictures of customizable tubing for substance dispersal. All told, the cost of the unit, mounting hardware, professional site survey and installation, and customized tubing assembly was $23,174. For two hangars, the problem could be solved with $46,348 – less than 10% of the permanent netting installation.

Excited about the project, I notified the building custodian in charge of the hangars, my leadership, hangar personnel leadership, the AFB safety office, and the AFB Bio-environmental shop. After some discussion, no viable argument was made against purchase of the unit.

Discontent, I contacted the company and asked for further guidance and clarification. Mr. Gary Crawford, the president and CEO of Birdbuffer LLC, contacted me personally to assure me of the following:

1. The reason that the product is listed as a pesticide is the Department of Agriculture has "control of birds falls into their jurisdiction, therefore any product used must be classified as a pesticide."

2. After extensive testing by the Food and Drug Administration (FDA), they have declared the product to be Generally Regarded as Safe (GRAS). This

means that the substance has been declared safe by the FDA as an additive for food.

3. "Due to the bio-pesticide classification of this product, it is a requirement NOT to store it with other pesticides, as there may be the possibility of cross contamination. Since our product is GRAS, it cannot be stored with products that are not safe." The point of this statement is that the product is significantly safer than pesticides that have not earned the GRAS label. The website has a more in-depth description of the difference between GRAS and non-GRAS pesticides.

4. Applications of the product are intended to be used in a restricted fashion. The unit can be programmed to come on only when the hangar doors are open or when personnel are not present; when the doors close, the unit will shut down. The reason this occurs is to avoid "overexposure" to personnel that are within and, since it is only during flight that the birds are affected, the birds must be allowed to fly in, experience the irritation, and fly back out. It should be a very slight scent of grape which is sufficient to irritate the birds. Settings on the machine can also be reduced to a minimum amount of release time.

5. The known hazards associated with the exposure to the accumulation of bird feces far outweigh the risks associated with exposure to the product. The known hazards are well-documented and illustrated.

6. This product has been licensed and approved for use in public areas in every state. The U.S. has very rigorous standards when it comes to the use of chemicals in public areas – this product is no different. It has been used in many kinds of places for long periods of time; from restaurants and fresh food markets to warehouses and aircraft hangars, there have been no reports of side-effects.

7. The unit disperses less than 2 ounces of this fluid per day and can be turned lower – there is no settling or residue that needs to be cleaned off of aircraft or the hangar floor.

8. The U.S. Patent and Trademark Office has recognized this method of bird control as so unique, it issued a patent on this process. The inventor will personally come to the site to help with proper settings of the machine and work with your decision of amount of exposure.

Conclusion: Please reconsider the employment of Bird Buffer units in our hangars. It is a practical answer to a growing predicament that has no other easy answer. In the spirit of AFSO 21, this product will save and/or improve:

1. Time. The amount of time lost in personnel cleaning themselves or their equipment up after having been defecated upon, cleaning the accumulation of toxic bird feces on our hangar floors, or cleaning the skin of our aircraft after spending time in our hangars is nearly incalculable. The purchase and use of the Bird Buffer product will save many hours in just the first month of use and will continue to do so over many years to come.

2. Lives. The toxic accumulation of bird feces has been proven to be hazardous to personnel that are routinely exposed to it. The same cannot be said of the Rejex-it® product – it has been proven safe and licensed for use in all 50 states. The use of this product is safer by far than continuing to subject our personnel to the risk of diseases like paratyphoid, vibriosis, salmonella (watch this video to understand how salmonella exposure acutely affects the human stomach and intestines), listeriosis, pasteurellosis, histoplasmosis, candidiasis, sarcosporidiosias, blastomycosis, encephalitis, meningitis, Newcastle Disease, St. Louis encephalitis, toxoplasmosis, trichomoniasis, and American trypanosomiasis. The risk of fungal, bacterial, protozoal, and viral transmission is too great to allow our personnel to be continually exposed to these life-threatening illnesses.
3. Money. The cost of installing permanent netting has been estimated at nearly half of million dollars. The Air Force can save 90% of this cost by purchasing the Bird Buffer units for its hangars – and do so safely! Even beyond the cost of the unit versus the cost of alternatives, there are the intangible amounts of money spent by our insurance companies treating the diseases to which our personnel are exposed and the money lost when personnel are cleaning bird feces (off of themselves, equipment, floors, and aircraft) when they should be inspecting, troubleshooting, and repairing aircraft.
4. The Air Force mission. The aircraft in our hangars are the backbone of the U.S. Air Force's ability to enforce air superiority. The longer our aircraft to sit in hangars and get covered by bird excrement, the lower their life expectancy drops. In order to give our oldest active aircraft (the KC-135) the best chance to fly well past 2040, we must eliminate this danger to its effectiveness. It has also been determined that keeping stealth aircraft clear of bird droppings is essential to maximize their radar-absorbent qualities (it has been proven that radar picks up the tiniest of bird droppings).

I believe that the use of this product is safe for use within our hangars and that it should be used extensively as the most viable solution to a problem that has serious health implications. The cost of not dealing with this growing problem far outweighs the low cost and negligible risk involved with the use of this product.