

BIRD WASTE AND SUBSTATIONS



A **Costly Threat** to
Worker Health and
System Reliability

TransGard™

Keep **animals out**. Keep the **power on**.

BIRD DROPPINGS

WORKERS IN DANGER, UTILITIES AT FINANCIAL RISK

There's an insidious problem plaguing substations across North America: bird droppings. Utilities often seek to prevent birds from nesting in substations to protect expensive equipment.

But many in the industry remain unaware of the significant health threat avian waste poses to their employees and the communities they serve.

During routine substation assessments and installation of its **Laser Bird Defense** technology, TransGard has identified numerous substations with significant buildup of bird excrement. That has led the company's research team to develop this report on how bird waste creates disease and illness in humans.

We also outline the serious consequences that can affect utilities who fail to stay ahead of the problem. Beyond sickness and lost man-hours, substation operators could face governmental intervention, fines, lawsuits, and unforeseen expenses.





AN INVISIBLE AIRBORNE MENACE

60 DISEASES, DOZENS OF PARASITES

The accumulation of corrosive bird feces at a substation can damage building materials and equipment. But the unperceived danger comes after the bird droppings dry, which turns them into an infectious dust fine enough to float on the air we breathe.

*Technicians, maintenance teams, clean-up crews – even someone walking past the substation environment could inhale the fungus and bacteria the droppings may contain. This hazardous dust can cause 60+ serious diseases in humans, according to **Medical News Today**.*

Among these health problems:

RESPIRATORY ILLNESSES

This problem occurs most frequently when dried bird droppings disintegrate into dust and are inhaled by humans. In some cases, as with the disease Histoplasmosis, fungi grow in bird droppings, break in to dust as they dry, and result in a potentially fatal respiratory disease when aspirated.

DIGESTIVE ILLNESSES

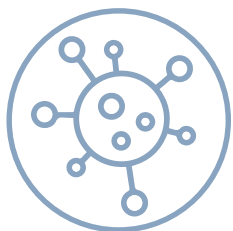
Intestinal parasites that are found in contaminated food can be picked up by birds and deposited in droppings. Illnesses in humans can include diarrhea, weight loss, bloating, nausea, vomiting, and dehydration.

NERVOUS SYSTEM AILMENTS

Yeast found in the intestinal tract of birds and deposited in droppings can cause pulmonary disease and central nervous system problems if accidentally inhaled or otherwise ingested by humans.



Besides being direct carriers of disease, birds are associated with over 50 kinds of ectoparasites like bed bugs, chicken mites, and others, which can work their way throughout structures to infest and bite humans.



CAREFUL WHAT YOU BREATHE

HUMAN ILLNESS AND BIRD WASTE

This abbreviated list outlines some of the diseases spread by bird excrement, along with common symptoms:

Avian influenza (or bird flu) is a virus that is excreted in the droppings of infected birds. Strains of this virus can cause flu-like symptoms, pneumonia, severe respiratory illness, diarrhea, and vomiting.

Cryptococcosis is caused by yeast found in the intestinal tract of some birds. The illness often begins as a pulmonary disease and may later affect the central nervous system.

E. coli The various types of *E. coli* bacteria can cause diarrhea, urinary tract infections, respiratory illness and pneumonia, or other illnesses.

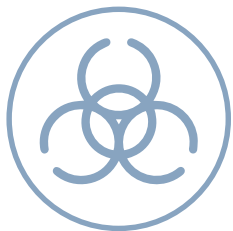
Histoplasmosis is an infectious disease caused by inhaling the spores of a fungus found in bird droppings. It can present as a temporary respiratory illness, but it may also lead to chronic lung disease.

Salmonella Birds are among many animals that carry these bacteria, which can cause diarrhea, vomiting, fever, and abdominal cramps.

Psittacosis is another disease caused by bird-borne bacteria. Symptoms include headache, fever, chest pain, and muscle aches.

(Sources: CDC, Medical News Today)





NOT SO EASY

RESTORING A SAFE WORKING ENVIRONMENT

Because substation operators may not understand the seriousness of the threat, removing bird waste and preventing bird incursions may be lower priorities than other operational challenges. But the consequences of inaction are great.

When utilities and power producers with a severe bird problem eventually do turn their focus to remediation, they discover the many challenges they face:

PROTECTING WORKERS Substation personnel face risks at an infested substation site. As noted earlier, particles of dried excrement can become an airborne pathogen, and fresh bird droppings — or an area of accumulated bird droppings that has recently been rained on — create a slip-and-fall hazard inside a substation. Even performing routine maintenance may require extra training and the use of additional respirators and other personal protective equipment.

CLEANUP COSTS Removing accumulated bird droppings is necessary to mitigate the health risk, but it's also expensive. *Utility Products* notes that utility companies pay high costs to “constantly clean and repair the damage caused by build-ups of bird feces. It is often necessary to take systems off line for cleaning and repair.”

THE THREAT TO RELIABILITY Droppings contain ammonia and high levels of uric acid, which eats away at surfaces over time. Bird feces can be corrosive to building materials and equipment, according to a report in *Utility Products*. Dried, accumulated bird droppings can return to a liquid state and become conductive after periods of rain or mist. These streams of feces can cause flashovers, fires, and outages.





BIRDS: A BOTTOM-LINE PROBLEM

THE CASCADE OF CONSEQUENCES

*Utilities that fail to keep birds — and their excrement — away from their substations face a wide range of problems beyond a time-consuming cleanup. Substation operators dealing with bird droppings could also take a huge financial hit, according to a report in **Occupational Health & Safety** magazine.*

FINES AND GOVERNMENT OVERSIGHT

OSHA, the USDA, local health boards, or other governmental organizations could cite and fine a facility, or shut it down, because of bird infestation or bird waste. (See sidebar.)

ON-THE-JOB INJURY OR ILLNESS

As outlined earlier, the illnesses caused by bird waste can be severe, leading to lost man-hours, high healthcare costs, Workers Comp claims, and difficulty hiring and retaining employees.

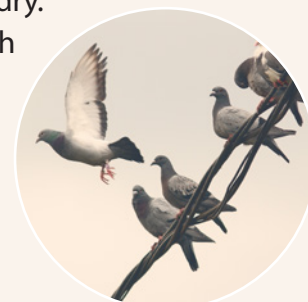
LIABILITY AND LAWSUITS If even one employee or passerby contracts an illness related to bird waste, the substation operator could face the cost — and negative publicity — of a lawsuit. In Florida, for example, a plaintiff won a \$1.2 million lawsuit against a school district when he contracted cryptococcus.

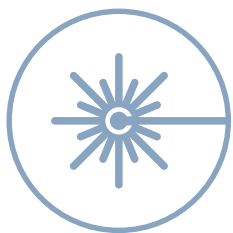
Because the clean-up process itself creates a hazard to employees and system reliability, the best course is to seek solutions that prevent birds from entering or nesting in any part of the substation. Unfortunately, many of the available deterrents provide temporary, spotty relief — or protect only specific pieces of equipment, allowing birds to make a substation their home.

IN THE NEWS

THE THREAT FROM ABOVE

- Several outbreaks of severe bird flu in Europe and Asia were reported in fall 2021, sparking fears the virus is spreading quickly again. The increase in outbreaks have attracted the attention of epidemiologists because **the virus can be transmitted to humans**.
- Research suggests that up to **49 percent of feral pigeons** could be infected with Chlamydia psittaci, an illness that in humans can lead to chills, fever, sweating, severe weakness, headache, blurred vision, and pneumonia.
- In 2014, as many as 100,000 seagulls on migratory flights caused a huge buildup of feces on walkways to the Cave of the Winds at Niagara Falls. **Almost 90 percent of seagull feces contains Enterococcus**, which causes infections that are antibiotic resistant.
- An **OSHA citation led to \$460,000 in penalties** for a New York -based foundry. Among the violations, which were announced in 2021: inspectors found a failure to prevent the buildup of bird feces on equipment.





A PREVENTABLE PROBLEM

THE HIGH-TECH, LASER-BASED SOLUTION

*Substation operators have tried various tactics to deter birds over the past few decades: decoys, noises, and plastic guards, among others. But **T&D World** reported that only 2% of utilities surveyed found techniques like loud sounds and visual scare devices to be effective.*

Lasers are a different story. Birds perceive an approaching laser beam as a physical danger and disperse; in fact, video demonstrations show that lasers drive birds – immediately – from an environment.

With **Laser Bird Defense**, TransGard has introduced an important new tool in the battle against bird incursions.

TransGard's array of mounted lasers can be installed and programmed in just hours – without any power interruption at a substation. Afterwards, the system provides immediate, automated, 24/7 deterrence.

With **Laser Bird Defense**, substations finally have an effective, economical approach to the decades-old problem of bird outages. To see a video of **Laser Bird Defense** at work, or to arrange a demonstration, visit www.transgardsolutions.com.



WHEN BIRDS INVADE SUBSTATIONS AND THE BIRD ATTRACTION

NAGANO, JAPAN At a substation in this metropolitan area, three feet of excrement had been allowed to pile up, according to utility staff. Arcing caused frequent outages – during one outage, 25,000 traffic lights and hundreds of homes lost power. The buildup also forced the utility to plan shut-downs for cleaning, which created a significant health hazard for employees tasked with clearing the feces.

COLUSA COUNTY, CALIFORNIA

This substation was invaded by as many as 10,000 European starlings, some of which roosted overnight in the capacitor banks. About 400 of these birds were electrocuted when their droppings caused a flashover that destroyed equipment. Excessive droppings also led to planned outages to remove fecal slicks, endangering employees during cleanup and maintenance activities.