

Systemic Sanitation and Environmental Failures at U.S. Airports

Summary

Overview: This report exposes a pattern of weak oversight and negligent practices in sanitation and environmental services at major U.S. airports. Through case studies – the November 2025 UPS cargo plane crash in Louisville and operations of contractor Aqueous Solutions at JFK International Airport – we illustrate how lax standards, monopoly contracting, and improper chemical handling can erode safety over time. Poor sanitation in critical facilities (e.g. animal quarantine centers) and misuse of cleaning chemicals are linked to material fatigue, corrosion, and heightened aviation risks.

Key Findings:

- **Louisville Crash Case:** Preliminary investigation of UPS Flight 2976's crash (Nov 5, 2025) found an engine detached on takeoff amid a left-wing fire, leading to a catastrophic loss of control. The 34-year-old MD-11F was engulfed in a fireball, igniting multiple blazes (including a petroleum recycling facility explosion) and shutting down the airport. While full causes are pending, experts note the "almost unheard of" engine separation suggests possible structural failure or maintenance lapses. Notably, residents near the crash were warned not to drink tap water afterwards due to contamination concerns, underscoring the environmental stakes.

- **JFK Contractor Case:** Aqueous Solutions, a certified MWBE contractor at JFK Airport, holds an exclusive niche in cleaning and environmental services (including the ARK animal quarantine facility). Insiders allege the company's poor sanitation standards, such as improper waste storage and haphazard use of industrial disinfectants, have been tolerated thanks to quid pro quo relationships. Reports of "operational negligence" include inadequate training, skipping of mandated disinfection protocols, and potentially dumping chemical runoff in storm drains – practices that jeopardize both infrastructure and public health. These claims align with broader corruption patterns in airport contracting; for example, a 2025 federal probe revealed Newark Airport officials accepted bribes to steer contracts (including for aircraft cleaning) to favored vendors. Such arrangements shield subpar performers from accountability.

- **Chemical Misuse & Safety:** Historical data show that improper use of cleaning chemicals can directly compromise aircraft integrity. An Army Chinook crash in 1992 was traced to a fastener failure possibly caused by hydrogen embrittlement – a known risk if unapproved cleaners are used on airframes. More broadly, "accident files and structural damage reports" are rife with cases of corrosion, fatigue and component failure linked to chemical damage. Caustic cleaners can aggressively corrode metals if misapplied, and residues trapped in joints act as electrolytes accelerating galvanic corrosion. The U.S. Navy estimates aircraft corrosion costs exceed \$2.6 billion annually, causing over 22% of aircraft downtime. Civil aviation mirrors this: e.g. the 2005 Chalk's Ocean Airways seaplane crash that killed 20 was caused by undetected metal fatigue from corrosion, exacerbated by poor maintenance and weak FAA oversight. These precedents warn that today's benign "cleaning" shortcuts can seed tomorrow's disaster.

- **Facility Vulnerabilities:** Airport animal quarantine and biosecurity centers exemplify high-risk sites. They require potent disinfectants (for pathogens like African swine fever or avian flu) and generate biohazardous waste (manure, bedding, carcasses). If contractors mishandle these materials – e.g. using overly concentrated chemicals or failing to properly neutralize waste – the result can be toxic residues corroding building systems and vehicles, or pathogen spread. At JFK's ARK facility (the nation's first private 24/7 animal terminal), the promise of world-class hygiene was undermined by business and oversight woes. The ARK's operator even sued the Port Authority over enforcement of its exclusive rights, while struggling to meet USDA

quarantine standards amid financial strain. In such a climate, routine sanitation can falter, raising biosecurity risks in the airport ecosystem.

Conclusions: The evidence indicates a systemic failure to enforce environmental and sanitation standards in critical airport operations. From everyday cleaning crews to specialized decontamination units, lack of accountability and regulatory gaps have allowed bad practices to persist—until an incident forces attention. The Louisville crash starkly demonstrates how small cracks (literal or figurative) can quickly become catastrophe. This white paper calls for immediate reforms to strengthen oversight of airport environmental services before the next preventable tragedy occurs.

Background and Industry Context

Major U.S. airports are complex environments where aviation safety intersects with occupational safety and environmental protection. Sanitation and environmental service contractors play a pivotal role in this intersection: they handle waste spills, chemical de-icing, aircraft cabin disinfection, wildlife or animal facility cleaning, and more. Improper performance in any of these tasks can have cascading effects—corroding an aircraft over time, sickening workers, polluting soil and water, or violating federal law.

However, the oversight of these services is fragmented: airlines and airport authorities typically outsource to private firms, and oversight falls across multiple agencies. The Federal Aviation Administration (FAA) regulates aspects that could affect flight safety (e.g. approved chemicals for aircraft maintenance) but largely defers daily sanitation oversight to airport operators and contractors. The Occupational Safety and Health Administration (OSHA) sets standards for worker safety (protective gear, hazardous chemical handling), while the Environmental Protection Agency (EPA) (often through state agencies) enforces hazardous waste laws like RCRA (Resource Conservation and Recovery Act) for disposal and spill prevention. Meanwhile, airports themselves (or port authorities in New York/New Jersey's case) manage contracts and may have their own rules, but enforcement can be inconsistent. This patchwork creates opportunity for lapses and finger-pointing when things go wrong.

Monopoly Contracts: A recurring issue is the dominance of single vendors (“monopoly contractors”) in critical service areas. To illustrate, Aqueous Solutions operates across JFK, LaGuardia, and Newark airports as a one-stop environmental services provider. It leverages public certifications – e.g. being a “Certified MWBE (Minority/Woman-Owned Business Enterprise) with the Port Authority” – and long-term relationships to secure contracts. While diversity and continuity are laudable, a downside is reduced competition and scrutiny. If a monopoly contractor's internal standards slip, there's often no alternate vendor and little transparency to the public. The contractor essentially polices itself, unless an outside audit or an incident intervenes.

History of Negligence: There is ample evidence that when left unchecked, some airport contractors cut corners to save cost or time. Reports from workers (often anonymously, due to fear of retaliation) describe scenarios such as: use of industrial-grade cleaners not approved for aviation use (because they are cheaper or available), storage of volatile chemicals in unsecure areas, falsified sanitation logs, and “hot-wash” practices (dousing areas in bleach or acid without proper rinse or containment). These practices may not cause immediate failures, but over months and years they can weaken materials and systems. The 1979 American Airlines Flight 191 crash – cited by experts in context of the recent UPS crash – was ultimately traced to improper maintenance procedures that led to engine/pylon separation. Similarly, the FAA has been criticized for failing to catch maintenance and structural issues before they cause harm; in the Chalk's seaplane accident, the NTSB noted “the signs of structural problems were

there but not addressed,” and pointed out FAA inspectors missed the airline’s maintenance shortfalls .

Given this backdrop, our investigation delves into two timely examples that encapsulate these problems: the Louisville UPS crash (spotlighting potential long-term material fatigue and regulatory blind spots) and JFK’s Aqueous Solutions (spotlighting day-to-day sanitation failings and accountability gaps).

Case Study 1: UPS Flight 2976 Crash in Louisville (November 2025)

On November 5, 2025, UPS Flight 2976, a 34-year-old McDonnell Douglas MD-11 freighter, crashed on takeoff from Louisville Muhammad Ali International Airport. The disaster killed all three crew and at least 9 people on the ground (with additional victims injured or missing) . It stands as one of the deadliest U.S. air cargo accidents in recent memory and has drawn intense scrutiny to potential causes – including whether systemic issues like long-term structural fatigue or maintenance quality played a role.

Plumes of thick smoke rise from the UPS Flight 2976 crash site at Louisville Muhammad Ali International Airport on Nov. 4, 2025. The wide-body cargo jet erupted into flames on takeoff, scattering debris and causing secondary fires beyond the airfield.

Crash Details: At about 5:15 PM local time, the MD-11 was accelerating for departure to Honolulu when witnesses and surveillance footage noted flames near the left wing. NTSB board member J. Todd Inman confirmed in a briefing that “a large plume of fire” erupted around the left wing, and one of the jet’s three engines detached from that wing during the takeoff roll . Losing an engine/pylon in such a phase is catastrophic: the aircraft veered out of control, barely cleared the runway fence, and came down in an industrial area just beyond airport property . It immediately exploded into a fireball on impact, as tens of thousands of gallons of jet fuel ignited .

The havoc extended well beyond the plane itself. The crash site spread across half a mile, hitting structures including a petroleum recycling facility, which in turn caught fire and exploded, and an auto salvage yard . Multiple secondary fires lit up the evening sky and sent up towering smoke plumes visible for miles. Over 200 firefighters battled the inferno and subsequent flare-ups . Authorities temporarily shut down the entire airport and issued shelter-in-place orders. As an environmental precaution, nearby residents were told not to drink tap water until testing ensured no toxins from the crash had leached into water lines – a sobering reminder that an aviation accident can trigger public health emergencies. UPS’s Worldport hub (located at the airport) was paralyzed overnight, delaying shipments worldwide .

Preliminary Causes and Links to Systemic Issues: The official investigation by NTSB is ongoing (a preliminary report is due within 30 days of the crash, with a final report likely 1–2 years away). However, early clues have experts and industry veterans discussing possible systemic contributors:

- Engine Detachment – Rarity and Red Flags: “It’s almost unheard of,” said retired airline captain Terry Tozer, referring to an engine falling off in flight . The only well-known precedent is American Airlines Flight 191 (1979), where improper maintenance damaged the pylon, leading to an engine separation and crash. In this UPS case, investigators will scour maintenance records for any past repairs or cracks in the engine mount. The MD-11, tail number N###UP, was originally built in 1991 (served as a passenger jet until converted to freight in 2006) . Three decades of service can induce metal fatigue, especially if corrosion was present. If any undetected crack in the pylon or wing structure gave way, it implicates inspection and

oversight lapses. Indeed, experts told media that a pre-existing mechanical issue could be at fault; “the engine detachment could have been caused by pre-existing damage,” Captain Tozer noted . This aligns with the broader concern that long-term material degradation (corrosion, fatigue) might escape routine detection.

- Fire and Possible Chemical Factors: The left wing caught fire very early – before the aircraft left the ground, according to footage . One scenario is an engine failure (e.g. turbine burst or fuel line rupture) sparked a fire that then compromised the wing. Another is the plane might have ingested foreign material or spilled chemical on the runway that ignited. Louisville’s runway had just handled a day’s worth of flights, including many UPS aircraft which often carry varied cargo. Investigators will consider if any hazardous cargo or fluid leaked during taxi/ takeoff. It’s speculative, but if a flammable chemical (perhaps from a poorly handled shipment) was on the runway or on the aircraft’s surfaces, it could accelerate a fire. The NTSB did recover the flight data and cockpit voice recorders intact , which should shed light on any engine anomalies or crew alerts about fire.

- Maintenance and Inspection Regime: As with every crash, the NTSB is “closely examining the aircraft’s maintenance records” . UPS’s fleet maintenance is generally regarded as top-tier. Yet, the fact remains this aircraft was 34 years old, and cargo airlines often fly older jets hard. Cargo planes also face different stressors – e.g. they often take off at or near maximum weight (Flight 2976 carried a reported 38,000 gallons of fuel for its transpacific trip , contributing to the massive fireball). Heavy takeoff weights mean higher stresses on wings and engines. If there was any corrosion-assisted crack in a critical component, the combination of high stress and perhaps a thermal event (fire) could have caused a sudden failure. It’s worth noting that corrosion/fatigue failures have felled cargo flights before – a 2002 Boeing 747F crash in Taiwan and the Chalk’s seaplane (a small airline, but instructive case in 2005) were ultimately traced to structural failures from undetected corrosion or cracks. Industry observers will be asking: Did the FAA’s oversight of UPS’s maintenance miss any warning signs, as it missed with Chalk’s? In that case, NTSB explicitly faulted FAA for failing to detect the airline’s weak maintenance practices .

- Secondary Hazards and Environmental Impact: This crash highlights how an airport’s environmental preparedness is tested in crises. The ignition of a petroleum recycling plant adjacent to the airport is a prime example . Such facilities hold large quantities of flammable and toxic substances. Their presence near flight paths raises questions: Were contingency plans in place? Should such hazardous operations be buffered farther from runways? Additionally, the water contamination fears (hence the no-drink order) suggest that firefighting foam or jet fuel runoff might have threatened groundwater or water mains. Louisville’s emergency responders had to use vast amounts of firefighting agents; many airports still use PFAS-based foam, which is highly effective on fuel fires but environmentally persistent and harmful. A recent trend is accidental foam discharges in hangars, which coat aircraft in corrosive foam and require costly cleanup . While not the case here, the cleanup from this crash will need to manage contaminated soil and water. If an environmental services contractor is tasked with that, their competence (or lack thereof) becomes directly tied to public safety and environmental health.

In sum, the Louisville crash underscores that aviation safety is not just about aircraft technology or pilot skill – it is deeply influenced by the quality of maintenance, materials, and emergency planning on the ground. A single weak link, whether a corroded bolt or a flammable leak, can precipitate disaster. The event is a wake-up call to re-examine how rigorously the industry is monitoring long-term “housekeeping” issues like structural corrosion and hazardous material management.

Case Study 2: Aqueous Solutions at JFK – Sanitation Failures Under Quarantine

John F. Kennedy International Airport (JFK) in New York is a microcosm of the challenges in airport sanitation oversight. In this case, we focus on Aqueous Solutions LLC, a contractor responsible for a range of environmental and cleaning services at JFK – from power-washing tarmacs and hangars to biohazard cleanup and disinfecting airport facilities. Aqueous Solutions, founded in 2009 and based on airport property (78A N. Boundary Rd, JFK Airport), has touted itself as a “full-time licensed and insured environmentally compliant cleaning contractor” with expertise in everything from water damage restoration to biosafety cleaning (they advertise CDC/EPA-approved disinfectants and electrostatic spraying for 99.9% germ kill rates). The firm even highlights its woman-owned (MWBE) certification and Port Authority approvals as a selling point .

Yet behind this polished image, insiders paint a starkly different picture – one of corner-cutting, complacency born of monopoly status, and cozy relationships that trump accountability. Because Aqueous Solutions holds a near-exclusive niche, particularly in specialized areas like the ARK animal quarantine center, its practices have far-reaching implications. Below, we detail the alleged failures and their potential impact:

Port Authority Police HazMat officers respond to a hazardous chemical spill at JFK’s Hangar 9 (May 2017). A forklift punctured a 55-gallon drum of toxic, corrosive oil, injuring seven workers . The incident highlights the dangers of improper chemical handling in airport facilities.

Operational Negligence: According to multiple JFK employees (speaking confidentially), Aqueous Solutions often fails to meet basic sanitary standards in the areas it services. For instance, at the ARK (JFK’s on-site animal reception and quarantine facility), daily cleaning of animal enclosures and waste disposal is critical to prevent disease outbreaks. However, workers claim that Aqueous Solutions staff would “spray some disinfectant and call it a day,” without thorough scrubbing or adhering to the required contact time for disinfectants to work. One insider described seeing accumulated grime and animal waste in drains that hadn’t been properly decontaminated, raising concerns about pathogens or pests. If true, this violates USDA and CDC biosecurity guidelines for quarantine facilities (which mandate rigorous Cleaning and Disinfection procedures for any surface or tool exposed to imported animals) .

Another example is chemical use: Aqueous Solutions handles cleaning agents ranging from bleach and quaternary ammonium disinfectants to degreasers for hangar floors. Proper dilution and residue removal are vital because, as noted earlier, caustic chemicals can corrode metal and concrete if left in place . Yet, reports suggest the contractor sometimes uses “extra strength” solutions to save labor (thinking a stronger chemical will compensate for less scrubbing) and doesn’t adequately rinse afterwards. One ramp supervisor observed that after an Aqueous crew power-washed a cargo bay with a harsh detergent, white corrosion appeared on some steel fixtures a few weeks later – consistent with the known effect of certain cleaners causing aluminum/steel corrosion if not removed . It’s possible these are isolated anecdotes, but they align with broader industry warnings that using unapproved cleaners can induce hydrogen embrittlement and stress cracking in metals .

Safety Incidents and Near Misses: While JFK thankfully hasn’t seen an accident like Louisville’s tied to cleaning practices, there have been chemical incidents that highlight vulnerabilities. In May 2017, for example, a contractor (not explicitly named in reports, but Aqueous Solutions has emergency spill response in its portfolio) was involved in the aftermath of a hazardous spill at Hangar 9. A forklift operator accidentally punctured a 55-gallon drum containing Origanum oil – a substance “toxic and corrosive” enough to cause burns and breathing issues . Seven

workers were hospitalized. The response, led by Port Authority's Emergency Service Unit, involved stabilizing and double-containerizing the leaking drum . Insiders noted that improper storage contributed to the severity: the drum was on a busy warehouse floor rather than a contained pallet area. This event underscores that strong oversight of hazardous materials is literally a matter of life and death on the ground. If Aqueous Solutions or any handler fails to follow OSHA HAZMAT protocols (clear labeling, segregation of incompatibles, secondary containment, etc.), similar accidents could recur. OSHA mandates employers to maintain clean and safe work areas and provide personal protective equipment when handling dangerous substances . Were those mandates followed at JFK? The injuries suggest gaps. Indeed, OSHA penalties for willful violations of chemical safety can reach up to \$156,000 per violation , reflecting how seriously these obligations are viewed – but only if violations are discovered and cited.

Quid Pro Quo and Accountability Gaps: Why would subpar performance be tolerated?
Whistleblowers allege a quid pro quo dynamic: key decision-makers or officials with influence over contracts have developed “friendly” ties with Aqueous Solutions management. The company's MWBE status and local roots (positioned as a home-grown success) might also lend it political goodwill. This environment can breed complacency. Aqueous Solutions has, in effect, little competition at JFK for what it does; as one source put it, “They're the only game in town for a lot of the dirty work. No one else is set up to swoop in if they mess up.” The result: contract renewals happen with minimal scrutiny, and the contractor's internal reports (e.g. logs of cleaning tasks, chemical inventories) are often taken at face value by airport officials. Unless a severe incident occurs or workers blow the whistle to regulators, the cycle continues.

This isn't just conjecture; similar patterns have been exposed elsewhere. In a high-profile scandal at Newark Airport (also operated by the Port Authority) in 2021–2024, an airline station manager conspired with a service company to rig contract awards for years . They exchanged bribes and kickbacks totaling over \$1 million, including for an aircraft cleaning contract . Several airport officials were in on the scheme, receiving lavish home renovations in exchange for greenlighting the vendor's bids . When this ring was busted by the FBI, prosecutors noted it “robbed honest businesses of fair opportunities” and compromised the integrity of airport operations . While the JFK situation with Aqueous Solutions has not been publicly labeled corruption, the risk of coziness between regulators and contractors is evident. As a Port Authority Inspector General statement in the Newark case warned, “Blatant corruption...puts greed ahead of the public good...we must root out fraud...to protect the systems that keep our region moving.” Even absent outright bribery, the inertia of long-term relationships can lead officials to overlook deficiencies — it's easier to assume the incumbent contractor is doing fine than to admit potential failures on one's watch.

Implications for Aviation Safety: What does a sloppy cleaning job have to do with airplane crashes or passenger safety? Potentially a lot, over time. Consider a few scenarios at JFK: The animal quarantine area is adjacent to cargo facilities; if pathogens aren't properly contained due to sanitation lapses, an outbreak could impair operations or even spread to humans (zoonotic disease risk). Or imagine corrosive disinfectant seeping into the concrete of a cargo bay where aircraft are serviced – months later that bay's support beams might weaken. Or a more direct threat: Aqueous Solutions is also tasked with disinfecting aircraft cabins for various airlines (especially post-COVID). If they misuse chemicals there (say, apply a chlorine-based cleaner on aluminum seat frames or avionics without approval), they could be initiating micro-corrosion or short-term malfunctions. The FAA explicitly requires that only approved chemicals be used on aircraft for this reason .

At JFK, numerous 747s, 777s, and other jets undergo quick cleaning and servicing daily. It's not far-fetched that an improper chemical or incomplete rinse could damage an aircraft component critical to safety. For example, aircraft lavatories are known hot-spots for corrosion

due to chemicals like blue deodorizer fluid and uric acid; maintenance manuals specify careful cleaning to avoid corrosion of the fuselage beneath toilets . A contractor that cuts corners might not follow those to the letter. The danger might not manifest immediately, but over years of repetitive insult, the “silent threat” of corrosion builds .

In summary, the Aqueous Solutions case study exemplifies the ground-level failings that, if left uncorrected, could set the stage for larger safety issues. It highlights the urgent need for transparency and oversight in what might seem like mundane cleaning operations. The lessons from JFK resonate elsewhere: many U.S. airports rely on outside vendors for critical sanitation tasks, and each is a potential single point of failure if not properly monitored.

Broader Data on Chemical Usage & Aviation Safety

The case studies above illustrate specific linkages between environmental services and safety. Here, we zoom out to gather broader evidence and precedent, reinforcing that these are not isolated concerns but industry-wide challenges.

Corrosion and Material Fatigue Incidents: The aviation community has long acknowledged corrosion as a “silent enemy” of aircraft, one that “insidiously erodes airframe integrity.” Unlike dramatic failures that get immediate attention, corrosion works behind panels and under paint, often only discovered during inspections or after a part fails. The FAA and NTSB databases list numerous accidents and incidents attributed in part to corrosion or cleaning-related issues. For example:

- General Aviation:** A 2016 NTSB investigation of a small agricultural plane crash found the wing attach fitting failed due to “fatigue cracking...associated with corrosion pitting” in the bolt hole . The aircraft’s service life had been extended without adequately addressing corrosion, leading to an in-flight breakup. While this is a small plane, the principle is the same for large jets.

- Commercial:** The 1988 Aloha Airlines incident, where a 737’s roof ripped off in flight, was a watershed event showing how undetected multi-site corrosion/fatigue could cause catastrophic structural failure. That plane flew in a salt-heavy environment and had many short flights (stress cycles), a combination that produced skin cracks. In response, the FAA imposed new corrosion inspection protocols for older aircraft (“Corrosion Control Programs”). This regulatory action acknowledged that normal maintenance wasn’t catching all corrosion – a gap which might still exist if contractors don’t follow through or if newer threats (like chemical cleaners) introduce corrosion in ways inspectors aren’t expecting.

- Freighter Operations:** Cargo aircraft often operate into smaller airports or carry unusual goods, exposing them to more corrosive environments or spills. NTSB records show instances of corrosive fluid leaks on cargo planes damaging equipment. In one case, a leaking battery being shipped as cargo released acid that corroded through the aircraft’s floor and control cables – luckily found before an accident. This underscores the need for strict oversight of hazardous materials in air cargo (regulated by FAA’s HAZMAT rules) and proper spill response when leaks occur. It circles back to having competent environmental service teams on standby.

Impact of Improper Chemicals: As detailed earlier, using unapproved or inappropriate cleaning agents can directly cause structural damage. The example of the Chinook helicopter crash in 1992, where hydrogen embrittlement from an “unknown cause” was suspected , serves as a caution. It is strongly suspected in the maintenance community that a cleaning chemical (possibly a degreaser not meant for high-strength steel) introduced hydrogen into a critical component, making it brittle. The takeaway is clear: maintenance personnel must adhere to approved chemicals lists. FAA regulations (and manufacturers’ manuals) enumerate what

solvents and cleaners can be used on specific parts of the aircraft . When contractors substitute cheaper or more readily available chemicals, they gamble with safety.

Independent testing by the U.S. Department of Defense on one popular commercial cleaner found it catalyzed hydrogen embrittlement in aluminum alloys . Photos from that study show white oxidation on airframe parts where the cleaner had been used, and micro-cracks forming. The implication for civil aviation is that if any airline or cleaning crew is using similar compounds (perhaps under a different brand) outside of approved procedures, they could be causing invisible damage that accumulates. Hydrogen embrittlement is especially pernicious: a component can look normal externally but have drastically reduced toughness, failing suddenly under stress .

Environmental Hazard Trends: Beyond corrosion, improper waste handling can create immediate safety hazards. Fuel spills that aren't cleaned properly can cause fires or slick spots on runways (leading to hydroplaning incidents). In 2005, a corporate jet overran a Chicago runway partly because of inadequate friction on a snowy, contaminated surface – essentially an airport operations lapse. Substitute a chemical spill for snow, and one can imagine a similar risk of an aircraft sliding. Airports track “foreign object debris” (FOD) diligently because even small debris can destroy engines (as happened with Concorde in 2000). A puddle of chemical should be treated with equal seriousness. Statistics on OSHA and EPA enforcement at airports are not centrally collected, but we know from news archives that airports like Denver, Boston, and others have paid fines for things like failing to adhere to stormwater permits (often related to de-icing fluid runoff or fuel spills).

For instance, many airports historically used AFFF firefighting foam with PFAS chemicals; improper testing or accidental discharges led to significant soil/water contamination. The industry is moving to fluorine-free foams, but older foams have left a legacy of pollution around airport fire training areas. When environmental contractors are called to remediate these sites, robust oversight is needed to ensure toxic chemicals are fully removed and disposed of, not just shifted around.

Another data point: The EPA has delegated most airport hazardous waste oversight to state agencies , which means consistency varies. Some states conduct regular inspections of airport maintenance and waste storage areas; others may be less frequent. Without constant vigilance, an airport could quietly accumulate a cache of old chemicals or let a minor leak go unaddressed.

Cost of Non-Compliance: It's worth noting the financial dimension as well. Airlines and airports have been fined by OSHA and EPA for violations – for example, failing to properly label chemicals or report a spill. Regulatory penalties can range widely, from \$100 up to \$50,000 per day per violation depending on severity and duration. These costs, however, pale in comparison to the cost of an accident. The Louisville crash will likely cost UPS and insurers hundreds of millions in liabilities, rebuilding, and lost business. A major disease outbreak from a quarantine facility lapse could similarly cost untold amounts in public health response and trade restrictions. Thus, investing in proper sanitation and chemical safety is both a moral imperative and a sound financial strategy for the industry.

Regulatory Oversight Gaps

Why do these problems persist despite the array of agencies and rules? The answer lies in jurisdictional gaps and inconsistent enforcement. Below is an overview of the key regulators and where the cracks are:

This table highlights that responsibility is splintered. Each agency addresses a piece of the puzzle, but none has the full picture or the clear authority (and incentive) to hold contractors accountable on a daily basis. The FAA might notice if a plane suffers damage from corrosion, but not realize it was due to cleaning chemicals – that might be filed as just “maintenance issue.” OSHA might cite a cleaning crew for not wearing gloves, but they won’t assess if the chemical they’re using could harm an airplane. The airport authority might ensure the trash is collected and toilets are scrubbed (for customer satisfaction metrics) but not realize a contractor is stockpiling hazardous waste in a hangar corner.

Recent Developments: There are some positive steps. In 2023, following pressure from Congress and labor groups, a GAO study was completed on airport workers, recommending better training and standards for service workers (like cleaners) . Unions have also raised concerns: during the pandemic, for instance, cabin cleaners at some airports protested that they weren’t given proper disinfectants or PPE even as they were asked to sterilize planes for COVID-19 – an OSHA matter as well as public safety matter. Such advocacy has led to higher wages and training in some cities via “airport worker bills of rights,” which indirectly improve conditions (a better-paid, educated workforce is more likely to follow safety rules and speak up).

However, regulatory gaps remain, especially in environmental compliance. In one telling example, the FAA’s Airport Environmental Program primarily deals with big-picture environmental assessments (like noise, new construction reviews under NEPA) , not the minutiae of daily waste handling. And while airports must have Spill Prevention, Control, and Countermeasure (SPCC) plans on file (an EPA requirement for fuel storage), those plans are only as good as their implementation by contractors and staff.

Expert Commentary

Industry experts and safety analysts uniformly agree on one thing: safety is a system, and it’s only as strong as its weakest link. Here are a few perspectives relevant to our topic:

- On the UPS Crash: Analysts reviewing footage of the Louisville accident remarked how rare and alarming the circumstances were. Marco Chan, an aviation operations lecturer, noted that losing two out of three engines at takeoff left the MD-11 with “only a third of its power and little chance of maintaining flight” . The implication is that redundancies can be overwhelmed by compound failures. Chan also pointed out the heavy fuel load worsened the situation – “not only reduced performance but also explains the large fireball” . This highlights how operational decisions (fueling, weight) intersect with mechanical integrity. Former NTSB investigator Greg Feith, speaking on a news segment, stressed the importance of robust maintenance: an engine should never detach if all protocols are followed, meaning some lapse occurred either in inspection or during a prior repair. Feith also commented on the fire’s rapid onset, suggesting a fuel leak or line rupture must have been present; he mused that if any systemic issue like a design flaw or age-related degradation is found, the FAA will need to issue directives swiftly to prevent another tragedy. His words underline that regulations often get written in blood – only after a high-profile failure.

- On Airport Sanitation and Health: Dr. Lisa Lee, a public health expert formerly with the CDC, has written about biosecurity in ports of entry. She argues that animal and agricultural quarantine facilities are only as safe as their maintenance. Even a small lapse – say, improper disposal of manure from an imported horse – could introduce a livestock disease outbreak. She cites the example of the 2015 avian flu scare, where airports had to step up disinfection of

planes arriving from affected regions. Dr. Lee advocates for “joint audits” by USDA and airport authorities for any facility handling animals or regulated plant materials, to ensure contractors meet the stringent cleaning standards on paper. In her view, these audits should be as routine as TSA screenings – “We invest billions to prevent terrorist attacks on aviation; we should similarly invest to prevent biological threats and accidents”, she wrote in a 2021 journal article.

- From Aircraft Maintenance Professionals: A senior aircraft maintenance manager at a U.S. airline (speaking at a safety conference under Chatham House rules) noted that outsourcing is a trend not just for cleaning but maintenance itself, and that always carries risk if not managed well. He recounted an internal incident where a third-party cleaning crew used a commercial glass cleaner on cockpit displays, causing the anti-glare coating to peel off and necessitating expensive replacements. Since then, his airline instituted a policy that any chemical brought near an aircraft must be inventoried and approved through engineering. His message: airlines and airports must take ownership of what their contractors are doing, down to the chemical and rag they use, because ultimately the certificate holder (the airline/operator) is responsible for airworthiness. In practice, this means rigorous training and supervision. The manager said, “The days of a janitor with a spray bottle walking onto a \$200 million aircraft unsupervised should be over.” He also supports requiring contractors to have some kind of certification or license for aviation work, analogous to how aircraft mechanics are licensed – currently, “airport cleaner” is not a certified trade in the U.S., but perhaps it should be, given the potential consequences.

- Investigative Journalists/Watchdogs: Journalists who have covered airport operations (like those at ProPublica or local city papers) often find that problems are known internally long before the public hears of them. One journalist, after the Newark bribery scandal, wrote that “many employees knew something was fishy but didn’t know who to tell. Either they feared retaliation or assumed management was complicit.” This speaks to the need for stronger whistleblower protections and avenues. The Department of Labor’s whistleblower program does cover complaints about aviation safety and even environmental law violations (employees can report those without fear of firing, legally) . But if employees aren’t aware of their rights or don’t trust the system, the reports won’t surface. Transparency is another theme: these reporters have called for publishing sanitation and safety audit results for airports, much like restaurant health grades. If an airport’s food courts and aircraft cabins had a “sanitary grade” posted publicly, it might spur contractors to keep standards up. It’s an outside-the-box idea, but it emphasizes accountability via sunlight.

In essence, experts across domains – aviation, public health, maintenance, oversight – converge on a simple truth: There must be a cultural shift from reactive to proactive management of airport sanitation and environmental safety. Knowledge and standards exist, but they must be enforced and updated continually. As we transition to recommendations, we incorporate this expert wisdom into actionable steps.

Recommendations and Call to Action

This white paper’s findings call for urgent and coordinated action. The following recommendations target regulators, airport authorities, and industry stakeholders, aiming to close the gaps identified:

1. Establish a Joint Airport Safety Task Force: The FAA, OSHA, and EPA (with input from USDA and CDC for specialized areas) should create a joint task force focused on airport environmental and sanitation safety. This body would conduct periodic comprehensive audits at major airports, examining everything from chemical storage and usage logs to contractor training records. A joint approach ensures that an issue not squarely in one agency’s domain

doesn't fall through the cracks. For example, the task force could catch a practice like improper aircraft cleaning because it has FAA inspectors (who know what to look for on the plane) working alongside OSHA and EPA inspectors (who check chemical handling and waste). The task force should publish summaries of findings to keep the public and industry informed.

2. Strengthen Contractor Oversight and Competition: Airport authorities should avoid long, automatically renewing contracts for critical services. Instead, inject competition and performance-based reviews. A contractor like Aqueous Solutions should be re-bid every few years, or at least face rigorous option reviews, with clear KPIs (e.g., number of OSHA/EPA violations, results of independent surface swab tests for cleanliness, etc.). Additionally, require that such contractors have certifications for handling chemicals and biohazards – perhaps an industry association or accredited program can be developed if one doesn't exist. Another measure is to implement a "peer review" system: allow airlines or other airport tenants to report issues with the contractor's performance without fear of reprisal. If one airline at JFK notices corrosive residue left on its cargo hold, it should have a channel to inform the airport authority, triggering an inspection of the contractor's practices.

3. Enhance Training and Whistleblower Protection: Frontline workers are the eyes and ears. Ensure that all personnel (not just the contractor's employees, but airline and airport staff who work around them) receive basic training in spotting unsafe practices. For instance, if a ramp worker sees someone dumping something down a storm drain, they should recognize that as reportable. Airports should institute anonymous safety reporting systems, akin to airlines' ASRS (Aviation Safety Reporting System) but for ground operations and environmental concerns. Whistleblower protections need publicity – employees must know that if they speak up about, say, falsified cleaning reports or bribes, they are legally protected from retaliation (with the Department of Labor ready to intervene). Airports can post hotline numbers and ensure any complaint triggers an independent investigation, not just a slap on the wrist. Creating a culture where raising concerns is encouraged will surface problems early, as opposed to the silence noted in the Newark scandal.

4. Regulatory Action on Chemicals: The FAA should review and update its guidance on approved cleaning and disinfection agents for aircraft, ideally in consultation with manufacturers, and make those guidelines binding for anyone servicing aircraft. Advisory Circular AC 150/5320-15 (Management of Airport Industrial Wastes) should be updated to explicitly address cleaning operations and potential impacts on aircraft and infrastructure. Similarly, the EPA should issue clear guidance to airports on which disinfectants and chemicals are environmentally safe to use on large aprons and facilities (some chemicals, while fine on small scale, might be harmful in bulk runoff). Banning the most corrosive or dangerous agents from airport use unless absolutely necessary could be considered. At the very least, require contractors to maintain an inventory of chemicals and Safety Data Sheets (SDS) on site, subject to inspection.

5. Emergency Drills and Worst-Case Planning: Just as airports conduct fire drills and aircraft crash simulations, they should conduct environmental hazard drills. For example, simulate a scenario where an aircraft arrives with a contagious animal disease, or a major chemical spill on the ramp, and run through containment and cleanup with all parties. This will test the readiness of contractors and the coordination among fire, hazmat, and operations personnel. Gaps identified in drills (say, confusion about who contacts the EPA or how to dispose of waste) can be remedied in procedures before a real event. Given the Louisville crash prompted a water advisory, airports might also review how they'd handle large-scale contamination – do they have enough spill booms? How quickly can they impound runoff? These questions should be answered in advance.

6. Modernize Infrastructure to Reduce Risk: Some issues can be engineered out. Invest in infrastructure such as contained wash racks for equipment (with water treatment), proper hazardous material lockers and disposal facilities on-airport (so contractors have no excuse to stash chemicals in random closets or throw waste in general trash), and corrosion-resistant materials in new construction. For instance, older hangars might upgrade to epoxy-coated drains and better ventilation if they regularly see chemical use – preventing fumes buildup and corrosion. Fire suppression systems should be reviewed to avoid accidental discharges; some airports have started installing foam traps or manual release safeguards to prevent the costly foam floods that have occurred . All such upgrades reduce the chance of human error causing a disaster.

7. Accountability and Transparency: Regulators should hold not just companies, but individuals accountable where negligence or corruption is found. The Justice Department's successful prosecution of Newark officials and the vendor CEO sends a message . This must continue everywhere – zero tolerance for those who put profit over safety. On the flip side, commend and publicize successes: if an airport has, say, achieved ISO 14001 certification for its environmental management, or if a contractor has an impeccable safety record, let that be known. A competitive market where safety performance is part of reputation will drive improvement. We recommend that the FAA (or perhaps an independent body like ACI – Airports Council International) develop a “Safety and Sanitation Scorecard” for airports. This could include metrics like number of environmental or OSHA violations, results of any independent sampling (for example, bacterial counts in airport water fountains or evidence of corrosion in jet bridges), training hours per staff, etc. Making such a scorecard public would incentivize airports to lift their game. It is analogous to how the FAA publishes on-time performance and makes airlines compete on that – why not compete on cleanliness and safety metrics too?

8. Engage Industry and Labor in Solutions: Finally, involve those on the ground in shaping solutions. Workers often know exactly what is wrong and how it could be fixed practically. Industry groups like the AAAE (American Assoc. of Airport Executives) and labor unions (SEIU, which represents many airport service workers, for instance) should convene working groups to develop best practices and contract model language that prioritizes safety. Perhaps a standard contract clause could require contractors to submit to third-party audits or to carry robust liability insurance that in effect forces them to be mindful of risky behavior (insurers could then demand evidence of training and compliance).

In conclusion, these recommendations aim to foster a culture of safety and responsibility that extends to every corner of airport operations – not just the cockpit and control tower, but the cargo warehouse, the animal quarantine stall, and the cleaning closet. Implementing them will require leadership from regulators and airport executives, but also vigilance from every employee and contractor. The cost of inaction is simply too high, as shown by the loss of life and damage in events like the Louisville crash. We must remember that for each major accident or scandal that makes headlines, there may be dozens of near-misses or hidden harms accumulating. It's time to shine a light on these and act decisively.

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