



NAC Executive Insights

Safety Insight: Biological Risks & Urban Pathogens

Key Points

- Assume standing water is contaminated.
- Small cuts can become serious exposures.
- Hand-to-face contact is a major infection path.
- Wet-work demands the right PPE every time.
- Decon failures can carry hazards home.

Introduction

Biological hazards often emerge quietly in the aftermath of urban disruption, yet they can pose consequences as serious as visible structural damage. This Executive Insight highlights the risks created when contaminated water, damaged infrastructure, debris, and damp confined spaces expose workers to bacteria, viruses, mold, and other harmful pathogens. It also frames the practical measures needed to reduce that exposure, including protective equipment, disciplined work practices, hygiene controls, and pre-entry preparation. Together, the sections that follow emphasize the importance of recognizing these often-overlooked threats and managing them with the same rigor applied to any other safety hazard.

THE "SILENT" THREAT

When buildings collapse, the separation between "clean" and "dirty" water disappears. Broken sewer mains, basement septic tanks, and stagnant floodwaters create a breeding ground for bacteria and viruses. Unlike a physical hazard, a biological hazard can be taken home in your digestive system or through a minor scratch.

COMMON URBAN BIO-HAZARDS

In a post-disaster urban zone, assume all standing water is **"Black Water"** (Sewage-grade):

- **Waterborne Pathogens:** Cholera, dysentery, and E. coli are prevalent where sewage lines have ruptured. Inhaling mist from contaminated water or touching your face after contact can lead to rapid dehydration and illness.

- **Leptospirosis:** A bacterial disease spread through the urine of displaced rodents (rats/mice) that thrives in floodwaters. It enters the body through the eyes, nose, mouth, or broken skin.
- **Tetanus (Lockjaw):** Found in soil and on rusted debris. In a non-sterile environment, a small puncture wound from a nail can be fatal without a recent booster shot.
- **Mold & Fungi:** Damp, dark, collapsed spaces breed toxic mold (*Stachybotrys*) within 24–48 hours. Inhaling spores can cause severe respiratory distress and long-term lung issues.

THE "WET-WORK" PROTECTION PROTOCOL

If your task involves clearing basements, trenches, or damp debris:

- **Dermal Barriers:** Wear waterproof boots (steel toe/shank) and chemical-resistant gloves (nitrile over-gloves). Do not allow "Black Water" to soak into leather boots or cotton gloves.
- **The "No-Touch" Face Rule:** Never touch your eyes, nose, or mouth while in the work zone. Pathogens are most commonly transferred by hand-to-face contact.
- **Wound Integrity:** If you sustain a cut or scratch—no matter how small—stop work immediately. Clean it with sterile water/antiseptic and bandage it. If the area was contaminated by sewage, seek medical "Post-Exposure" consultation.
- **Vector Awareness:** Displaced urban wildlife (rats, stray dogs, insects) are stressed and more likely to bite. Do not attempt to move or "rescue" animals in the work zone.

HYGIENE & DECONTAMINATION

- **The "Clean Hands" Station:** Before eating, drinking, or smoking, use a dedicated hand-washing station with soap and clean, bottled water. Alcohol-based sanitizers are a backup, but they do not "kill" all soil-based pathogens.
- **Boot Wash:** Use a 10% bleach solution to spray down boots before entering vehicles or clean "Green Zones."
- **PPE Disposal:** Treat heavily soiled gloves or coveralls as bio-hazardous waste. Do not store them in your personal bag or vehicle.

PRE-ENTRY CHECKLIST

- ☐ Vaccination: Is your tetanus shot up to date (within the last 5-10 years)?
- ☐ Fluid Control: Is the team equipped with waterproof gear for "wet" areas?
- ☐ Sanitation: Is there a designated "Decon" area away from the debris?
- ☐ First Aid: Does the site kit contain antiseptic wash and sterile bandages?

TEAM ACKNOWLEDGMENT

I confirm I have been briefed on the risks of sewage and waterborne pathogens and will maintain strict hand-hygiene protocols.

Name_____

Signature_____

Date_____

For Further Reading – Other Safety Insights

- Structurally Compromised or High-Risk Zones
- Unexploded Ordnance (UXO) Awareness
- Booby Trap & IED Recognition
- Environmental & Chemical Hazards
- Mental Operational Readiness

About the Author

Bob Prieto was elected to the National Academy of Construction in 2011. He is a senior executive who is effective in shaping and executing business strategy and a recognized leader within the infrastructure, engineering, and construction industries. Bob received the 2024 ASCE OPAL Award (Outstanding Projects and Leaders) for his Outstanding Lifetime Achievement in Management.

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