A Common Sense Guide to Being Prepared

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The shock of the September 11 airplane attacks has made the improbable and the catastrophic suddenly seem possible. Crop dusters have been grounded for fears of a biological attack. Guards are posted at many city reservoirs. Trucks are being inspected on their way into New York. But some scenarios are more likely than others. That's why we've assembled this guide to help you sort out the threats for yourself and see what precautions people are taking.

The possibility of any of these things happening is extremely remote. Even assembling the needed biological or chemical agents would require far more organization, money and expertise than was evident on September 11. But, in the interest of being prepared for the unlikely and also calming down any unnecessary fears, here's what's being done, and what you can do.

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By David Bjerklie, Christine Gorman and Alice Park

In the three weeks since the Sept. 11 attacks, Americans have become increasingly concerned that the next one might be even worse. In the Time/cnn poll taken last week, 53% of those surveyed feared a chemical or biological attack; 23% a nuclear strike. Among terrorism experts, however, the focus has shifted from a single large-scale assault - which would be difficult to pull off - to a series of smaller attacks that could be just as damaging to the U.S. economy and public morale. How serious are these threats? What form might they take? The best guesses of the experts consulted by Time offer both reassurance and fresh cause for alarm.
Here's a look at what form a possible future attack could take...

DISEASE

Smallpox
It doesn't take an exotic virus like Ebola to transform the U.S. into a hot zone. A single case of smallpox could put the entire nation at risk. The smallpox virus is highly contagious and would spread quickly because Americans are not vaccinated. Routine inoculations were halted in 1972. People vaccinated before 1972 lost most of their immunity within 10 years.
A terrorist who wanted to launch a smallpox attack, however, would probably have a very hard time getting hold of the virus. Smallpox was eradicated in 1980. Officially, only two stores of the virus exist, for research purposes, in secure locations in the U.S. and Russia. There may be covert stashes in Iraq, North Korea and Russia, but these countries would be reluctant to release them, fearing a smallpox epidemic among their own unvaccinated people. Even if a terrorist were successful in obtaining the virus, his plans could backfire: smallpox is so contagious that the first victims are likely to be the members of his own terrorist cell.

Anthrax
Many bacterial agents can be used as bioweapons, including Clostridium botulinum (botulism) and Yersinia pestis (plague). But anthrax stands out because its spores are particularly hardy; they are resistant to sunlight, heat and disinfectant, and can remain active in soil and water for years. Anthrax occurs naturally in both wild and domestic animals‹including cattle, sheep and camels. Infection from direct contact with affected animals is fatal in 20% of cases. If inhaled, however, anthrax spores cause death in almost 90% of the time.

Yet manufacturing sufficient quantities of any bacteria in a stable form is a technical and scientific challenge; plague bugs, for example, degrade within hours when exposed to the sun, and anthrax spores tend to clump together in humid conditions. The Japanese cult Aum Shinrikyo sprayed anthrax and botulism eight times over parts of Tokyo without effect.
Despite all the attention being given crop dusters, using one to spread germs is not as easy as it sounds. The planes are designed to spray pesticides in heavy, concentrated streams, whereas bioweapons are ideally scattered in a fine mist over as large an area as possible. The nozzles in crop dusters are best suited to discharging relatively large particles - 100 microns in diameter - not tiny one-micron specks of bacteria.

Sarin
Unlike biological agents, which are living organisms that require proper conditions to survive, chemical weapons such as the nerve gases sarin and VX are relatively easy to acquire and stockpile. Chemicals are difficult to manufacture in sufficient quantities for a large-scale attack, however; more likely are isolated assaults such as the 1995 sarin attack on a Tokyo subway that injured thousands and killed 12.

WATER

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Reservoirs
Poisoning your enemy's well is an ancient tradition, but would-be terrorists would find it extremely hard to inflict widespread casualties through our water supply. Chlorine in treated water kills most microbes, and huge quantities of chemical toxins would have to be dumped into a reservoir to make many people sick, let alone kill them. (A U.N. study estimated that it would take 10 tons of potassium cyanide.) Drinking water might be threatened locally, however, if someone managed to tap the pipe going into a building or neighborhood or infiltrate a water-treatment facility. With this threat in mind, municipal water authorities have stepped up security.

Dams
If poisoning the water supply doesn't work, terrorists might try to cut it off or disrupt it. On an even grander scale, they might blow up a dam, causing widespread flooding damage downstream. Compounding the impact would be the loss of hydroelectric-power generation. With security beefed up at major dams across the country, however, especially at landmark behemoths such as Hoover and Grand Coulee dams, it would take a very determined effort to carry out such an attack.

HAZ-MATS

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Chemical plants
some 850,000 facilities in the U.S. handle hazardous chemicals. Many substances that have benign industrial uses, such as metal cleaning or photo developing, can in theory be turned into dangerous weapons. But gaining access to plants, either for sabotage or to get raw materials, is difficult. Employees handling hazardous materials undergo security background checks, and chemical manufacturers across the country last week were double-checking their employee rolls. Since Sept. 11, most facilities have barred outside visitors and allowed only authorized personnel to enter.

Trucking companies
dangerous chemicals are most vulnerable to interception while they are being transported. Today 2.5

million Americans have commercial driver's licenses to carry fuels and other hazardous materials. Truckers must pass two tests: the federally mandated 30-question multiple-choice test (states can add more questions) to obtain a commercial vehicle license and a separate test on the procedures for safely handling hazardous substances. After the arrest of about 20 people suspected of fraudulently obtaining haz-mat licenses, chemical companies tightened their transport policies, assigning two drivers to every vehicle and using satellite tracking systems to monitor haulers from pickup to drop-off.

FOOD POISONING

By David Bjerklie, Christine Gorman and Alice Park

Salmonella
as oregon's rajneeshee cult demonstrated in 1984, it is not difficult to set off a wave of food poisonings. Indeed, gastroenteritis caused by natural contamination and careless food handling afflicts millions and results in 5,000 deaths each year. The Rajneeshees considered a number of different viruses and bacteria, including those that cause hepatitis and typhus, but decided for their purposes (disrupting the outcome of a local election) on a strain of salmonella that would be debilitating but not fatal. Salmonella poisonings tend to be localized. With proper hygiene, the bacterium is not particularly contagious.

E. coli
an even easier bug to obtain is the familiar intestinal parasite E. coli. Naturally occurring outbreaks of E. coli, typically the result of fecal contamination in everything from hamburgers to swimming pools, sicken hundreds of thousands of Americans each year. In New York City this spring, a man was arrested after he was spotted spraying what turned out to be feces-laden water over the contents of a midtown salad bar (fortunately, no one got sick). A far more virulent strain of the bacterium called O157:H7 is sometimes fatal, but identifying and isolating the right strain is beyond the technical capabilities of most terrorists.

Foot-and-mouth disease
a terrorist attack aimed at crops and livestock would be less dramatic but might cause more disruption in the long run. Such attempts are not unheard of. In World War II, Britain accused Germany of dropping small, cardboard bombs filled with beetle pests on English potato fields, and in the 1980s Tamil militants threatened to target Sri Lankan tea and rubber plantations with plant pathogens. Perhaps the most worrisome threat to U.S. agriculture is foot-and-mouth disease, which can spread with astonishing speed in sheep, cattle and swine. Not seen in this country since 1929, the disease is harmless to humans but renders farm animals economically worthless. The U.S. could be forced to destroy much of its own livestock, as Great Britain had to do earlier this year.

EXPLOSIVES

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Car, truck and backpack bombs
exotic weapons get a lot of attention, but conventional explosives and suicide bombers in pizza parlors, discothèques and shopping malls can spread terror with stunning effectiveness. Fertilizer bombs like the one that destroyed the Alfred P. Murrah Federal Building in Oklahoma City, Okla., in 1995 could wreak havoc with bridges, tunnels and buildings. Nuclear-power and chemical-manufacturing plants make even more horrifying targets. The 1984 leak at the Union Carbide plant in Bhopal, India, may have killed 3,000. Estimates of the final death toll from the 1986 explosion in the Chernobyl nuclear plant run as high as 30,000.

Nuclear weapons
the ultimate nightmare would be terrorists in the U.S. wielding nuclear weapons. For this reason, the ability to create - or worse, steal or buy - weapons-grade plutonium has long been an issue of great concern and international intrigue. Fortunately, the practical difficulties in acquiring precisely the right materials, not to mention the engineering know-how to jerry-build a nuclear device successfully, makes this type of threat highly unlikely.

BIOLOGICAL WEAPONS

Excerpted from "The Next Threat", Time Magazine, 1 October 2001

Germ warfare has been around since at least the Middle Ages, when armies besieging a city would catapult corpses infected with the black plague over the walls. Today the bugs authorities most fear are anthrax (a bacterium) and smallpox (a virus). Both are highly lethal: the former kills nearly 90% of its victims, the latter some 30%. Anthrax is not communicable; smallpox, on the other hand, can be transmitted with horrifying ease from one person to another. "The feelings of uncertainty, of who is infected, of who will get infected, are the main advantages of biowarfare," says Stephen Morse of the Columbia University School of Public Health.

During the cold war, both the U.S. and the Soviet Union began developing anthrax as a biological weapon. Today 17 nations are believed to have biological weapons programs, many of which involve anthrax. Officially, the only sources of smallpox are small quantities in the labs of the Centers for Disease Control in Atlanta and at Vector in Koltsovo, Russia. But experts believe that Russia, Iraq and North Korea have all experimented with the virus and that significant secret stashes remain. Even more worrisome are reports that Russia used genetic engineering to try to make anthrax and smallpox more lethal and resistant to antibiotics and vaccines. (The U.S. put a similar program on hold.)

Why not just vaccinate every American against every possible germ-warfare agent? That would be impractical, if not impossible, and the side effects of the inoculations would pose a significant health risk. Instead, says Michael Osterholm, director of the Center for Infectious Disease Research and Policy at the University of Minnesota, we should strengthen the country's public health system. After Sept. 11, hospitals in New York City were asked to report any outbreaks of unusual symptoms. Health experts know that in the event of biological attack, the earlier an epidemic is detected, the easier it is to contain.

Experts in antiterrorism share their concern. At the turn of the past century, says Brian Jenkins of the Rand Corp., epidemics of diseases like yellow fever and cholera kept health workers on their toes. Now, after a decade of cutbacks, "our ability to treat large numbers of casualties has been reduced," he says. "The notion of reinvesting to create a muscular public health system is not a bad idea, even if there is no terrorism."

General Safeguards

- All cropdusters have been temporarily grounded.
- The CDC maintains and can expand a national pharmaceutical stockpile with antibiotics, vaccines and antidotes for many biological attacks.
- You can stock up on a few emergency items, including bottled water, storable food, batteries, flashlight, antibiotics, a portable radio and face mask.