



Appendix H PREVIOUS PLAN NATURALLY OCCURRING BIOLOGICAL THREATS AND TERRORISM

H.1 Naturally Occurring Biological Threats

H.1.1 Hazard Definition

Public health-related hazards may be the result of a naturally occurring event or terrorism. Key hazards of concern to Butte County today are described below.

West Nile Virus (WNV) is a mosquito-borne virus that has been found in parts of Asia, Eastern Europe, Africa, and the Middle East. The virus arrived in the Western Hemisphere in 1999 in New York City. The more severe forms of West Nile virus are West Nile encephalitis, West Nile meningitis, and West Nile meningoencephalitis. Encephalitis refers to an inflammation of the brain, meningitis is an inflammation of the membrane around the brain and the spinal cord, and meningoencephalitis refers to inflammation of the brain and the membrane surrounding it.

Avian Influenza (Bird Flu) and Avian Influenza A (H5N1) Virus is an infection by avian (bird) influenza (flu) viruses. These influenza viruses occur naturally among birds. Wild birds worldwide carry the viruses in their intestines, but usually do not get sick from them. However, avian influenza is very contagious among birds and can make some domesticated birds, including chickens, ducks, and turkeys, very sick and kill them.

Infected birds shed influenza virus in their saliva, nasal secretions, and feces. Susceptible birds become infected when they have contact with contaminated secretions or excretions or with surfaces that are contaminated with secretions or excretions from infected birds. Domesticated birds may become infected with avian influenza virus through direct contact with infected waterfowl or other infected poultry, or through contact with surfaces (such as dirt or cages) or materials (such as water or feed) that have been contaminated with the virus.

Infection with avian influenza viruses in domestic poultry causes two main forms of disease that are distinguished by low and high extremes of virulence. The low pathogenic form may go undetected and usually causes only mild symptoms (such as ruffled feathers and a drop in egg production). However, the highly pathogenic form spreads more rapidly through flocks of poultry. This form may cause disease that affects multiple internal organs and has a mortality rate that can reach 90-100% often within 48 hours.

Usually, avian influenza virus refers to influenza A viruses found chiefly in birds, but infections with these viruses can occur in humans. The risk from avian influenza is generally low to most people, because the viruses do not usually infect humans. However, confirmed cases of human

infection from several subtypes of avian influenza infection have been reported since 1997. Most cases of avian influenza infection in humans have resulted from contact with infected poultry or surfaces contaminated with secretion/excretions from infected birds. The spread of avian influenza viruses from one ill person to another has been reported very rarely, and transmission has not been observed to continue beyond one person.

Bovine Spongiform Encephalopathy (BSE) is widely referred to as “mad cow disease.” It is a chronic degenerative disease that affects the central nervous system of cattle. BSE is named because of the spongy appearance of the brain tissue of infected cattle examined under a microscope. BSE belongs to a family of diseases known as the transmissible spongiform encephalopathies (TSEs). TSE animal diseases found in the United States include scrapie in sheep and goats, chronic wasting disease in deer and elk, transmissible spongiform encephalopathy in mink, feline spongiform encephalopathy in cats, and in humans: kuru, both classic and variant Creutzfeldt-Jakob disease, Gerstmann-Straussler- Scheinker syndrome, and fatal familial insomnia.

The agent that is responsible for BSE and other TSEs has not been fully characterized. Although other types of agents have been implicated, the theory that is most accepted in the scientific community is that the agent is a prion, which is an abnormal form of a normal protein known as a cellular prion protein. The TSE agents are extremely resistant to heat, ultraviolet light, ionizing radiation, normal sterilization processes, and common disinfectants that normally inactivate viruses and bacteria.

There is no evidence to date that BSE emanated from TSEs in other animals. Regarding feeding practices, it is known that cattle can become infected with BSE by eating feed contaminated with the infectious BSE agent.

Current scientific research confirms that BSE infectivity occurs in the brain, trigeminal ganglia, tonsils, spinal cord, dorsal root ganglion, and distal ileum of the small intestine of cattle experimentally infected with the BSE agent. Research also confirms that BSE infectivity is in the brain, spinal cord, and retina of the eyes of cattle infected with the agent under field conditions.

BSE is not a contagious disease. There is no evidence that the disease is transmitted through direct contact or animal-to-animal spread. The primary means by which animals become infected is through consumption of feed contaminated with the infectious BSE agent.

Botulism is a serious paralytic illness caused by a nerve toxin that is produced by the bacterium *Clostridium botulinum*. There are three main kinds of botulism. Food borne botulism is caused by eating foods that contain the botulism toxin. Wound botulism is caused by toxin produced from a wound infected with *Clostridium botulinum*. Infant botulism is caused by consuming the spores of the botulinum bacteria, which then grow in the intestines and release toxin. All forms of botulism can be fatal and are considered medical emergencies. Food borne botulism can be especially dangerous because many people can be poisoned by eating a contaminated food.

Campylobacter jejuni (Pronounced “camp-e-low-back-ter j-june-eye”) was not recognized as a cause of human food borne illness prior to 1975. Now, the bacterial organism is known to be the most common cause of food borne illness in the U.S. (Salmonella is the second most common cause). Food is the most common vehicle for the spread of Campylobacter and poultry is the most common food implicated. Some case-control studies indicate that up to 70% of sporadic cases of campylobacteriosis are associated with eating chicken. Surveys by the USDA demonstrated that up to 88% of the broiler chicken carcasses in the U.S. are contaminated with Campylobacter while a recent Consumer Reports study identified Campylobacter in 63% of more than 1000 chickens obtained in grocery stores. Other identified food vehicles include unpasteurized milk, undercooked meats, mushrooms, hamburger, cheese, pork, shellfish, and eggs.

Canine Distemper is a viral disease of young dogs characterized by high fever and respiratory inflammation. It can affect wild animals and County pets. Other animal diseases which can affect humans include rabies and toxoplasmosis (an opportunistic infection caused by the microscopic parasite *Toxoplasma gondii*, found in raw or undercooked meat and cat feces), as well as parasites such as roundworms, whipworms, hookworms, ringworms, and mange.

E. coli is found in the family of bacteria named Enterobacteriaceae, which is informally referred to as the enteric bacteria. Most forms of *E. coli* are harmless; however, there are strains that cause serious illness. Other enteric bacteria are the Salmonella bacteria (also a very large family, with many different members), *Klebsiella pneumoniae*, and *Shigella*, which many people consider to be part of the *E. coli* family.

Exotic Newcastle Disease (END) is a contagious viral disease affecting many species of birds including poultry and wild birds. This is probably one of the most infectious diseases of poultry in the world with a death rate of almost 100 percent in unvaccinated poultry flocks and so virulent that many birds die without showing any clinical signs. The disease can even infect and cause death in vaccinated poultry.

END is extremely contagious. The spread is primarily through direct contact between healthy birds and the bodily fluids of infected birds. It can be transmitted through infected bird droppings as well as secretions from the nose, mouth and eyes. It spreads rapidly among confined birds like commercially raised chickens. The disease is also easily spread by virus-bearing material picked up on shoes and clothing and carried from an infected flock to a healthy one. END can also spread from poultry flocks to wildlife as wild birds come into contact with infected poultry, possibly when wild birds enter a pen to feed on spilled grain. Although experiments have documented that several wild species including ducks and pheasants can develop the disease, widespread illness and death has only been documented in double-crested cormorants in the United States and Canada. This disease affects the respiratory, nervous and digestive systems, with an incubation period ranging from two to 15 days.

The available information suggests that Newcastle disease can affect people; however, it does not pose a significant health risk. In humans, the disease is usually limited to conjunctivitis, which is a mild inflammation of the tissues around the eyes and is seen in persons associated with infected birds or facilities where infected birds are housed. It should be noted that poultry products in the Arizona marketplace, including eggs and meat, continue to be safe to consume.

Hantavirus infection is caused by a group of viruses that can infect humans with two serious illnesses: hemorrhagic fever with renal syndrome (HFRS) and Hantavirus pulmonary syndrome (HP S). Hantaviruses are found without causing symptoms within various species of rodents and are passed to humans by exposure to the urine, feces, or saliva of those infected rodents. Ten different Hantaviruses have been identified as important in humans.

Hepatitis A is one of five human hepatitis viruses that primarily infect the human liver and cause human illness. The other known human hepatitis viruses are hepatitis B, C, D, and E. Hepatitis A is relatively unusual in nations with developed sanitation systems such as the U.S. Nevertheless, it continues to occur here. Each year, an estimated 100 persons die as a result of acute liver failure in the U.S. due to hepatitis A. Approximately 30 - 50,000 cases occur yearly in the U.S. and the direct and indirect costs of these cases exceed \$300 million. Hepatitis A is totally preventable, and need not occur.

Listeria monocytogenes is a pathogenic (disease-causing) bacterium that is food-borne and causes an illness called listeriosis. It is frequently overlooked as a possible cause of illness due to its unique growth capabilities. First, it is somewhat difficult for laboratories to grow, and when they do so, Listeria can be confused with common harmless contaminants and disregarded. Second, most bacteria grow poorly when temperatures fall below 40°F, while Listeria survives at temperatures from below freezing (20°F) to body temperature and it grows best at 0°F to 50°F, including the temperature range that we use for refrigeration. As a result, Listeria may be transmitted in ready-to-eat foods that have been kept properly refrigerated.

Lyme Disease (*Borrelia burgdorferi*) is a systemic, tick borne disease with protean manifestations, including dermatologic, rheumatologic, neurologic, and cardiac abnormalities. The best clinical marker for the disease is an initial skin lesion that occurs in 60%-80% of patients.

Monkeypox is a rare viral disease that occurs mostly in central and western Africa. It is called monkeypox because it was first found in 1958 in laboratory monkeys. Monkeypox was reported in humans for the first time in 1970. In early June 2003, monkeypox was reported among several people in the U.S. Most of these people got sick after having contact with pet prairie dogs that were sick with monkeypox. This was the first time that there had been an outbreak of monkeypox in the U.S. The disease is caused by Monkeypox virus. It belongs to a group of viruses that includes the smallpox virus (*variola*), the virus used in the smallpox vaccine (*vaccinia*), and the cowpox virus. In humans, the signs and symptoms of monkeypox are like those of smallpox, but usually

they are milder. Another difference is that monkeypox causes the lymph nodes to swell.

Norwalk virus is a virus that attaches to the outside of cells lining the intestine. Once attached, it transfers its genetic material into that cell. There it reproduces, finally killing the human cell to release new copies of it that attach to more cells of the intestine's lining. Common names of the illness caused by the Norwalk and other small round structured or caliciviruses are viral gastroenteritis, acute nonbacterial gastroenteritis, food poisoning, and food borne infection. This illness occurs worldwide. Humans are the only known hosts. The viruses are passed in the stool of infected persons. Of viruses, only the common cold is reported more often than viral gastroenteritis. Norwalk and Norwalk like viruses are increasingly being recognized as leading causes of food-borne disease in the United States. People most often get Norwalk virus infection by swallowing infected food or water. Outbreaks in the U.S. are often linked to eating raw shellfish, especially oysters and clams. Steaming does not kill the virus or prevent its transmission.

Plague is a disease caused by *Yersinia pestis* (*Y. pestis*), a bacterium found in rodents and their fleas in many areas around the world. Pneumonic plague is different from the bubonic plague. Both are caused by *Yersinia pestis*, but they are transmitted differently and their symptoms differ. Pneumonic plague can be transmitted from person to person; bubonic plague cannot. Pneumonic plague affects the lungs and is transmitted when a person breathes in *Y. pestis* particles in the air. Bubonic plague is transmitted through the bite of an infected flea or exposure to infected material through a break in the skin. Symptoms include swollen, tender lymph glands called buboes. Buboes are not present in pneumonic plague. If bubonic plague is not treated, however, the bacteria can spread through the bloodstream and infect the lungs, causing a secondary case of pneumonic plague. Patients usually have fever, weakness, and rapidly developing pneumonia with shortness of breath, chest pain, cough, and sometimes bloody or watery sputum. Nausea, vomiting, and abdominal pain may also occur. Without early treatment, pneumonic plague usually leads to respiratory failure, shock, and rapid death.

Salmonella is a type of bacteria that causes typhoid fever and many other infections of intestinal origin. Typhoid fever, rare in the U.S., is caused by a particular strain designated *Salmonella typhi*. But illness due to other *Salmonella* strains, just called "salmonellosis," is common in the U.S. Today, the number of known strains of this bacteria total over 2300.

SARS is a respiratory illness of unknown cause that has recently been reported in a number of countries. According to the World Health Organization (WHO), the main symptoms and signs of SARS include a fever greater than 100.5° F (38° C), and cough, shortness of breath, or difficulty breathing. The cause of SARS is not known at this time. Researchers at CDC and around the world are working to find the cause of SARS. At this early stage of the investigation, it seems more likely that SARS is caused by an organism that we have less experience with rather than a commonly occurring, known organism.

The **Shigella germ** is a bacterium that can cause sudden and severe diarrhea (gastroenteritis) in humans. Shigella lives in the human intestine and is commonly spread both through food and by person-to-person contact. The illness is also known as “bacillary dysentery.” About 25,000 or so laboratory confirmed cases of shigellosis are reported each year in the U.S. However, many cases go undiagnosed and/or unreported, and the best estimates are that 450,000 cases of Shigella infection actually occur annually in the U.S.

Tularemia is a potentially serious illness that occurs naturally in the U.S. It is caused by the bacterium Francisella tularensis found in animals (especially rodents, rabbits, and hares). Tularemia is also known as rabbit fever. Tularemia is usually a rural disease and has been reported in all U.S. states except Hawaii. Tularemia is a widespread disease in animals. About 200 human cases of tularemia are reported each year in the U.S. Most cases occur in the south-central and western states.

H.1.2 History

The first California recorded death from West Nile Virus in 2006 occurred in Butte County. In 2005 there was the presence of West Nile Virus infecting 25 humans, 79 birds, 53 sentinel chickens and 7 horses. Outbreaks had been localized and controlled. From 1995 to 2003 there have been reported 98 cases of Lyme disease in the County.

H.1.3 Risk Assessment

Given the existence of naturally occurring biological agents in Butte County, without enhanced public outreach, monitoring and control the potential exists for one or more of these virulent diseases to dramatically affect the life, health and safety of County citizens.

Effects on people and housing

Humans are susceptible to the effects of most Naturally-Occurring Biological Threats.

Risk assessment conclusion

Because the risk for a pandemic outbreak of a lethal disease does exist, preparedness should be maintained at a high level.

H.1.4 Plans and Programs

Public Health

According to the California Code of Regulations, the County Health Officer (CHO) will take whatever measures are necessary to investigate and control reported or suspected diseases and conditions. Such measures include, but are not limited to, confirmation of a clinical or laboratory diagnosis, determination that an unusual disease or disease outbreak exists, determination and

investigation of the source, and the prevention and control of the disease. Various functions within County Public Health assist the CHO, depending on the issues being addressed.

The Public Health Laboratory System in California is a unique and diverse system of 39 autonomous County and City facilities, working in close cooperation with the California Department of Health Services state laboratories. The Butte County Public Health Laboratory provides extensive laboratory services to the people of California for diagnostic and epidemiological investigations. The Health Department Laboratories are staffed by Public Health Microbiologists. These professionals are certified by the State of California, hold baccalaureate degrees and have been trained in approved public health laboratories. Laboratories vary in size from one certified Public Health Microbiologist to 50, depending on population and level of service provided. An approved Laboratory Director supervises each laboratory.

Immediate Disease Control Measures

Among other responsibilities, the CHO is authorized under the California Health and Safety Code to take measures as may be necessary to prevent the spread of communicable disease. Generally, actions may include obtaining information pertaining to the incident, assess the health risk to the community, notify appropriate agencies, and coordinate disease prevention and control with community, local, regional, state and federal agencies. Should it be necessary, the CHO will also initiate Quarantine measures within the County.

Notification of First Responders, Medical Community and Public Sector

If, after consultation with appropriate local, regional, state or federal agencies, the CHO determines that an imminent or actual health threat exists, local response will be initiated in accordance with emergency response and notification protocols. Depending on the nature of the event, potential responders may include local, state and/or federal emergency/disaster, law enforcement and health agencies.

H.2 Terrorism

H.2.1 Hazard Definition

Terrorism is defined in 28 CFR Section 0.85) as ...the unlawful use of force and violence against persons or property to intimidate or coerce a government, the civilian population, or any segment thereof, in furtherance of political or social objectives. Since September 11, 2001, terrorism has become a fact of life for all Americans. Planning for response to potential terrorist incidents has long been part of California's Emergency Preparedness Planning effort. California provides a target-rich environment for terrorists, with many facilities and venues and an easy place to hide in California's diverse population. Effective hazard mitigation that reduces risk to terrorism must be based upon technical expert information and analysis of actual terrorist events.

Terrorists often use threats to create fear among the public, to try to convince citizens that their government is powerless to prevent terrorism, and to get immediate publicity for their causes. Terrorist acts or acts of war may cause casualties, extensive property damage, fires, flooding, and other ensuing hazards.

Terrorism takes many forms, including:

- Chemical
- Biological
- Radiological
- Nuclear
- Explosive
- Cyber-terrorism

Chemical. Chemical weapons have been used primarily to terrorize an unprotected civilian population and not as a weapon of war. This is because of fear of retaliation and the likelihood that the agent would contaminate the battlefield for a long period of time.

Some analysts suggest that the possibility of a chemical attack would appear far more likely than either the use of nuclear or biological materials, largely due to the easy availability of many of the necessary precursor substances needed to construct chemical weapons. Additionally, the rudimentary technical knowledge needed to build a working chemical device is taught in every college level chemistry course in the world.

Some chemical agents are odorless and tasteless and are difficult to detect. They can have an immediate effect (a few seconds to a few minutes) or a delayed effect (several hours to several days).

Biological. Biological weapons are defined as any infectious agent such as a bacteria or virus used to produce illness or death in people, animals, or plants. This definition is often expanded to

include biologically-derived toxins and poisons. Biological agents can be dispersed as aerosols or airborne particles. Terrorists may use biological agents to contaminate food or water because the agents are extremely difficult to detect.

Radiological. A radioactive material is a material made up of unstable atoms which give off excess energy in the form of radiation through the process of radioactive decay. Radiation cannot be detected by human senses. Wherever radioactive materials are used, transported, or stored there is a potential for a radiological accident to occur. Some of their most common uses include use:

- By doctors to detect and treat serious diseases.
- By educational institutions and companies for research.
- By the military to power large ships and submarines.
- By companies in the manufacture of products.
- As a critical base material to help produce the commercial electrical power that is generated by a nuclear power plant.
- As one of the critical components in nuclear weapons, which are relied upon to help deter the threat of war.

Nuclear. The possibility exists that a terrorist organization might acquire the capability of creating a small nuclear detonation. A single nuclear detonation in the United States would likely produce fallout affecting an area many times greater than that of the blast itself. There is also the possibility that a terrorist will construct a dirty bomb, a bomb that is used to distribute nuclear contaminated materials. It would have less of an effect than a traditional nuclear bomb, but the terror effect on the population would be great.

Explosive. The possibility exists that a terrorist may attack with conventional explosives, particularly in a public setting. Innumerable incidents have occurred around the world involving car bombs, truck bombs, and bombs attached directly to terrorist individuals.

Cyber-terrorism. Cyber-terrorism is the use of computer network tools to shut down critical government infrastructures such as energy, transportation, and government operations, or to coerce or intimidate a government or civilian population. The premise of cyber terrorism is that as nations and critical infrastructure became more dependent on computer networks for their operation, new vulnerabilities are created. A hostile nation or group could exploit these vulnerabilities to penetrate a poorly secured computer network and disrupt or even shut down critical public or business operations.

The goal of cyber terrorism is believed to be aimed at hurting the economy of a region or country, and to amplify the effects of a traditional physical terrorist attack by causing additional confusion and panic.

H.2.2 History

Fortunately, Butte County has no history of incidents of chemical, biological, nuclear, radiological, or explosive terrorism. The County has been impacted as has the rest of the world by recent computer viruses and worms.

H.2.3 Risk Assessment

Many terrorist events have occurred in California, most recently the attempted attack on the Suburban Propane tanks in Elk Grove in 1999. Worldwide there were 457 incidents or planned acts during the period from 1980 to 1999. Of these, 135 were international and 322 domestic terrorism. The majority of these incidents (321) have been bombings. However, there is also a concern for the potential of Weapons of Mass Destruction (WMD) use in future terrorist events. The use of WMDs increases the potential for mass casualties and damage.

One of the special considerations in dealing with the terrorist threat is that it is difficult to predict. One must know the minds and capabilities of various terrorists and terrorist groups. These are characteristics terrorist organizations strive to conceal. Because all terrorists are not the same, the calculation is even more difficult. Two things are clear from the perspective of hazard mitigation. The most often used weapon of terrorists is bombs and the greatest potential for loss is from WMDs.

Because of the dynamic nature of the terrorist threat and the open nature of California society, all jurisdictions within California are vulnerable to terrorist attack.

Chemical. A terrorist would not have to build a complicated chemical release device. During favorable weather conditions an already existing chemical plant could be sabotaged or bombed releasing a toxic cloud to drift into a populated area. The result could be just as dangerous as having placed a smaller chemical device in a more confined space. This type of incident would cause the maximum amount of fear, trepidation, and potential panic among the civilian population, and thus achieve a major terrorist objective.

Biological. The agents are cheap, easy to make, and simple to conceal. Even small amounts, if effectively deployed, could cause massive injuries and overwhelm emergency rooms. The production of biological weapons can be carried out virtually anywhere in simple laboratories, on a farm, or even in a home.

However, experts say it remains very difficult to transform a deadly virus or bacterium into a weapon that can be effectively dispersed. A bomb carrying a biological agent would likely destroy the germ as it explodes. Dispersing the agents with aerosols is challenging because biomaterials are often wet and can clog sprayers. Most agree that, while a biological attack could be devastating in theory, in reality, the logistical challenges of developing effective agents and then dispersing them make it less likely a terrorist could carry out a successful widespread assault.

Radiological/Nuclear. Under extreme circumstances an accident or intentional explosion involving radiological materials can cause very serious problems. Consequences may include death, severe health risks to the public, damage to the environment, and extraordinary loss of, or damage to, property.

Explosive. Explosive terrorist attacks may have consequences including death and damage to property.

Cyber-terrorism. Recent incidents illustrate the County's vulnerability to cyber terrorism.

Effects on people and housing

Depending on levels of contamination and exposure, effects could range from minimal to devastating.

Effects on commercial and industrial structures

Depending on levels of contamination and exposure, effects could range from minimal to devastating.

Effects on infrastructure

Nuclear, radiological, and cyber-terrorism can have profound effects on infrastructure.

Effects on agriculture

Depending on levels of contamination and exposure, effects could range from minimal to devastating.

Risk assessment conclusion

Due to events such as the 9/11 Twin Towers attack and the declared war against terrorism, national and local governments have assigned high priority to terrorist attack preparedness.

H.2.4 Plans and Programs

The County does not have a set terrorism plan. Law enforcement does train for emergencies that include terrorism.