

Characteristics of Biologic, Nuclear, Incendiary, and Chemical Agents

BIOLOGIC AGENT CHARACTERISTICS

Disease	Transmitted Man to Man	Incubation Period	Duration of Illness	Lethality (approx case-fatality rates)	Persistence of Organism
Inhalation anthrax	No	1–6 days	3–5 days (usually fatal if untreated)	High	Very stable: spores remain viable >40 years in soil
Brucellosis	No	5–60 days (usually 1–2 m)	Weeks to months	<5% if untreated	Very stable
Pneumonic plague	High	2–3 days	1–6 days (usually fatal)	High unless treated within 12–24 h	Up to 1 year in soil; 270 days in live tissue
Tularemia	No	2–10 days (average 3–5)	≥2 weeks	Moderate if untreated	Months (in moist soil/other media)
Q Fever	Rare	10–40 days	2–14 days	Very low	Months (on wood and sand)
Smallpox	High	7–17 days (average 12)	4 weeks	High to moderate	Very stable
Venezuelan equine encephalitis	Low	2–6 days	Days to weeks	Low	Relatively unstable
Viral hemorrhagic fevers	Moderate	4–21 days	Death in 7–16 days	Zaire strain: high Sudan strain: moderate	Relatively unstable (depends on agent)
Botulism	No	1–5 days	Death in 24–72 hours; non-lethal illness lasts months	High unless respiratory support is provided	Weeks (in nonmoving water and food)
Staph enterotoxin B	No	3–12 hours after inhalation	Hours	<1%	Resistant to freezing
Ricin	No	18–24 hours	Days (death within 10–12 days for ingestion)	High	Stable
T-2 mycotoxins	No	2–4 hours	Days to months	Moderate	Years (at room temperature)

Source: Adapted from USAMRIID's *Medical Management of Biological Casualties Handbook* (www.usamriid.army.mil).

BIOLOGIC AGENT MATRIX

Signs/Symptoms by System		Anthrax	Plague	Tularemia	Brucellosis	Q Fever	Bacterial Diarrhea	Smallpox	Viral Encephalitis	Viral Hemorrhagic Fevers	Botulinum	Enterotoxins	Ricin	Mycotoxins
Respiratory	Nonproductive cough	X	X	X	X	X		X				X		
	Cough with bloody sputum		X											
	Chest discomfort	X	X	X	X	X				X				X
	Shortness of breath	X	X	X								X	X	X
	Respiratory failure/distress	X									X	X	X	X
Circulatory	Abdominal pain	X	X	X			X	X		X		X		X
	Hypotension									X		X	X	X
	Shock	X								X		X		
	Hemorrhage			X						X				X
GI	Nausea		X			X	X			X		X	X	
	Vomiting		X	X			X	X	X	X	X	X	X	X
	Diarrhea		X	X			X		X	X	X	X		X
Skin	Skin lesions	X	X	X				X						X
	Skin inflammation							X		X				X
Neuromuscular	Drowsiness								X					
	Weakness/prostration		X	X	X	X		X			X		X	
	Progressive weakness of extremities										X			
	Muscular pain		X	X	X	X				X		X		
	Muscle rigidity							X						
	Flaccid paralysis, usually neck										X			
General	Chills		X	X	X	X		X		X		X		
	Fever	X	X	X	X	X	X	X	X	X		X	X	
	Fatigue	X			X									
	Headaches		X	X	X	X	X	X	X	X		X		
	Sore throat		X	X		X			X	X				
	Swollen lymph nodes	X	X	X									X	

X indicates signs/symptoms present.

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NUCLEAR, INCENDIARY, AND CHEMICAL AGENT MATRIX

Signs/Symptoms by System		Nuclear Agent	Incendiary Agent	Nerve Agent	Blister Agent	Lewisite Agent	Blood Agents	Choking Agents	Irritant Agents
ENT	Pinpoint pupils			X					
	Involuntary closing of eyes								X
	Immediate eye pain								X
	Runny nose			X					
Respiratory	Nonproductive cough							X	X
	Shortness of breath					X	X		X
	Difficulty breathing			X					
	Choking							X	
	Increased respirations					X	X		
	Temporary respiratory cessation			X					
	Respiratory failure				X				
CV	Chest tightness							X	
	Cardiac symptoms					X	X		
GI	Nausea	X		X				X	
	Vomiting			X		X	X	X	
Skin	Blistering				X				
	Burns	X	X						
	Immediate skin pain								X
	Stinging sensation on moist skin								X
	Sweating			X					
Neuro	Dizziness					X	X		
	Loss of consciousness			X					
	Seizures			X					
	Convulsions			X	X	X	X		
General	Weakness			X		X	X		
	Sluggishness				X				
	Lethargy				X				
	Apathy				X				
	Headaches					X	X		
	Copious secretions			X					
	Fever				X				
Odor	Odor of bleach/chlorine/pool							X	
	Odor of burnt almonds					X	X		
	Odor of hair spray								X
	Odor of newly mown hay/grass							X	
	Odor of peach kernels					X	X		
	Odor of pepper								X

ENT indicates ears/nose/throat; CV, cardiovascular; GI, gastrointestinal; neuro, neurologic. X indicates signs/symptoms present.

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