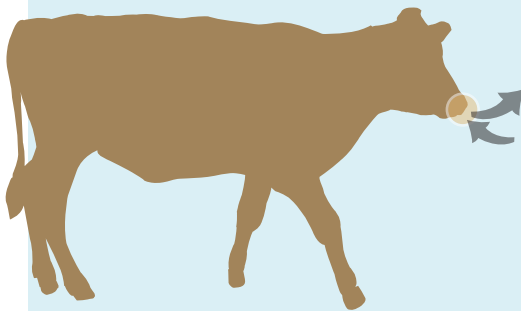


# Bovine Disease Exposure Routes: Aerosol

**Aerosol:** Droplets containing disease agents pass through the air and are inhaled.



	Zoonotic Disease	Foreign Animal Disease
Anthrax ( <i>Bacillus anthracis</i> )	●	
<i>Aspergillus spp.</i>		
Bovine Respiratory Syncytial Virus (BRSV)		
Bovine Viral Diarrhea (BVD)		
Contagious Bovine Pleuropneumonia		●
Foot and Mouth Disease (FMD)	* (in Zoonotic column)	●
<i>Histophilus somni</i> (TEME)		
Infectious Bovine Rhinotracheitis (IBR, red nose)		
Malignant Catarrhal Fever—African Form		●
Malignant Catarrhal Fever—North American Form		
<i>Mannheimia (Pasteurella) haemolytica</i>		
Melioidosis ( <i>Burkholderia pseudomallei</i> )	●	
<i>Mycoplasma bovis</i>		
Parainfluenza Virus (PI3)		
Q Fever ( <i>Coxiella burnetii</i> )	●	
Tuberculosis ( <i>Mycobacterium bovis</i> )	●	
Vesicular Stomatitis Virus (Indiana subtype 1; New Jersey subtype)	●	
Vesicular Stomatitis Virus (Indiana subtypes 2,3)	●	●

- **Zoonotic Disease:** Spread between animals and humans
- **Foreign Animal Disease (FAD):** Previously eradicated or never found with the U.S. animal population; if diagnosed, it is reportable to state and federal animal health authorities.

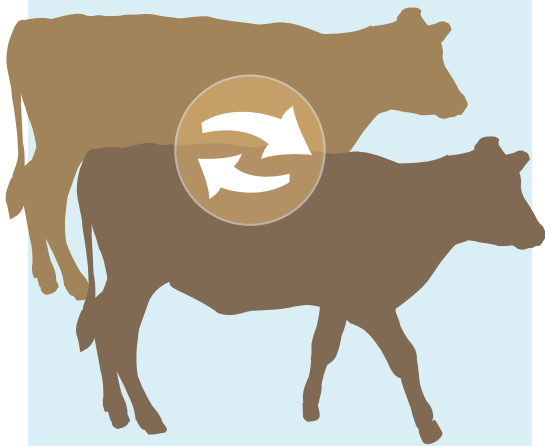


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\* Foot and Mouth Disease—on very rare occasions, FMD virus has been reported to cause *mild* lesions in people. It is not considered to be a public health concern.

# Bovine Disease Exposure Routes: Direct Contact

**Direct Contact:** The disease agent in blood or saliva directly touches open wounds, mucous membranes, or the skin through nose-to-nose contact, rubbing, or biting.



- **Zoonotic Disease:** Spread between animals and humans
- **Foreign Animal Disease (FAD):** Previously eradicated or never found with the U.S. animal population; if diagnosed, it is reportable to state and federal animal health authorities.



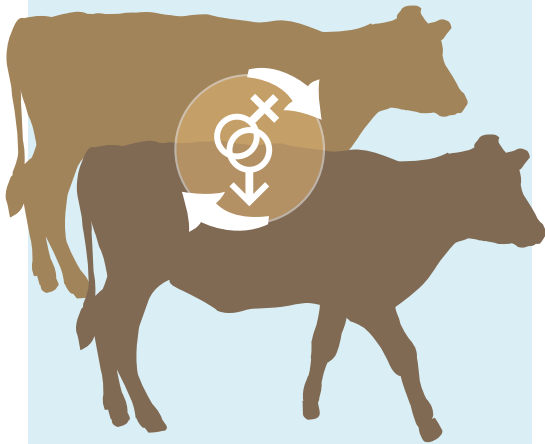
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	Zoonotic Disease	Foreign Animal Disease
Anthrax ( <i>Bacillus anthracis</i> )	●	
Brucellosis ( <i>Brucella abortus</i> )	●	
Contagious Bovine Pleuropneumonia (CBPP)		●
<i>Corynebacterium pseudotuberculosis</i> (Ulcerative lymphangitis)		
<i>Dermatophilus congolensis</i> (Rainscald, rainrot)	●	
External parasites		
Foot and Mouth Disease (FMD)	* (in red)	●
Foot rot ( <i>Fusobacterium necrophorum</i> )		
Hairy heel warts		
Infectious Bovine Rhinotracheitis (IBR, red nose)		
Leptospirosis ( <i>Leptospira spp.</i> )	●	
Lumpy jaw ( <i>Actinomyces bovis</i> )		
Lumpy Skin Disease Virus		●
Malignant Catarrhal Fever-African Form		●
Malignant Catarrhal Fever-North American Form		
Mastitis, coliform		
Mastitis, contagious		
Pinkeye ( <i>Moraxella bovis</i> , <i>Mycoplasma bovoculi</i> , and others)		
Pseudocowpox Virus	●	
Pseudorabies Virus		
Q Fever ( <i>Coxiella burnetii</i> )	●	
Rabies	●	
Rinderpest		●
Ringworm ( <i>Microsporium spp.</i> , <i>Trichophyton spp.</i> )	●	
Tetanus ( <i>Clostridium tetanii</i> )	●	
<i>Trueperella</i> ( <i>Archanobacterium</i> )		
Vesicular Stomatitis Virus (Indiana subtype 1; New Jersey subtype)	●	
Vesicular Stomatitis Virus (Indiana subtypes 2,3)	●	●
Warts		
Wooden tongue ( <i>Actinobacillus lignieresii</i> )		

\* Foot and Mouth Disease—on very rare occasions, FMD virus has been reported to cause *mild* lesions in people. It is not considered to be a public health concern.

# Bovine Disease Exposure Routes: Reproductive (Direct)

**Reproductive:** A subtype of direct contact involving exposure to the disease agent during mating (semen) or during pregnancy (in utero).



- **Zoonotic Disease:** Spread between animals and humans
- **Foreign Animal Disease (FAD):** Previously eradicated or never found with the U.S. animal population; if diagnosed, it is reportable to state and federal animal health authorities.

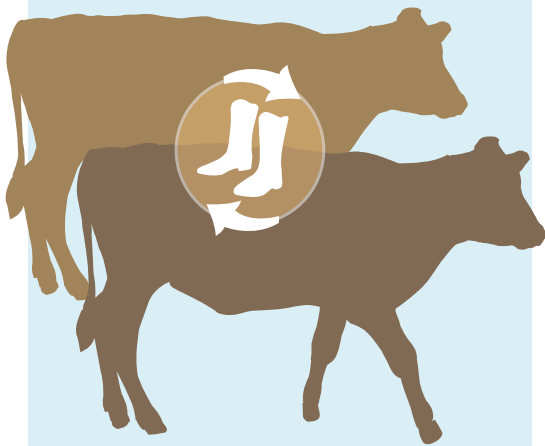
	Zoonotic Disease	Foreign Animal Disease
Bluetongue Virus		
Bovine Leukemia Virus (BLV)		
Bovine Viral Diarrhea (BVD)		
Brucellosis ( <i>Brucella abortus</i> )	●	
Contagious Bovine Pleuropneumonia		●
Infectious Bovine Rhinotracheitis (IBR, red nose)		
Johne's disease ( <i>Mycobacterium avium ssp. paratuberculosis</i> )		
<i>Neospora caninum</i>		
Trichomoniasis ( <i>Tritrichomonas foetus</i> )		
Tuberculosis ( <i>Mycobacterium bovis</i> )	●	
Vibrio ( <i>Campylobacter spp.</i> )		



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# Bovine Disease Exposure Routes: Fomite

**✗ Fomite:** An inanimate object carrying a disease agent from one susceptible animal to another.



- Zoonotic Disease:** Spread between animals and humans
- Foreign Animal Disease (FAD):** Previously eradicated or never found with the U.S. animal population; if diagnosed, it is reportable to state and federal animal health authorities.



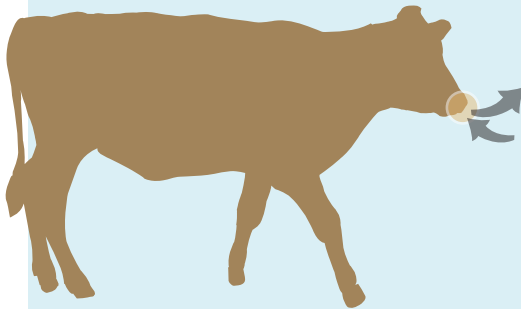
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	Zoonotic Disease	Foreign Animal Disease								
		Feed/Water Equipment	Footwear	Handling Equipment	Housing	Milk/Milking Equipment	Soil	Treatment Equipment	Water	Wires
Anaplasmosis ( <i>Anaplasma marginale</i> )								✗		
Anthrax ( <i>Bacillus anthracis</i> )	●					✗	✗		✗	
Bluetongue Virus								✗		
Bovine Leukemia Virus (BLV)								✗		
Bovine Viral Diarrhea (BVD)								✗		
Coccidiosis ( <i>Eimeria spp.</i> , <i>Isospora spp.</i> )		✗	✗							
Coronavirus		✗	✗		✗					
<i>Corynebacterium pseudotuberculosis</i> (Ulcerative lymphangitis)							✗	✗		
<i>Dermatophilus congolensis</i> (Rainscald, rainrot)	●			✗						
Digital dermatitis (Hairy warts)			✗					✗		
Foot and Mouth Disease (FMD)	✳	●	✗	✗	✗	✗		✗		
Lumpy jaw ( <i>Actinomyces bovis</i> )		✗								✗
Mastitis, coliform					✗					
Mastitis, contagious						✗				
Ringworm ( <i>Microsporum spp.</i> , <i>Trichophyton spp.</i> )	●			✗						
Rotavirus		✗	✗		✗					
<i>Salmonella spp.</i>	●	✗	✗		✗					
Tetanus ( <i>Clostridium tetanii</i> )	●						✗			✗
Vesicular Stomatitis Virus (Indiana subtype 1; New Jersey Subtype)	●	●	✗			✗		✗		
Vesicular Stomatitis Virus (Indiana subtypes 2, 3)	●	✗				✗		✗		
Warts (bovine papillomavirus)		✗	✗	✗	✗	✗				

✳ Foot and Mouth Disease—on very rare occasions, FMD virus has been reported to cause *mild* lesions in people. It is not considered to be a public health concern.

# Bovine Disease Exposure Routes: Oral

**Oral:** Consuming disease agents in contaminated feed, water or licking/chewing on contaminated environmental objects.



- **Zoonotic Disease:** Spread between animals and humans
- **Foreign Animal Disease (FAD):** Previously eradicated or never found with the U.S. animal population; if diagnosed, it is reportable to state and federal animal health authorities.

	Zoonotic Disease	Foreign Animal Disease
Anthrax ( <i>Bacillus anthracis</i> )	●	
Blackleg ( <i>Clostridium chauvoei</i> )		
Botulism ( <i>Clostridium botulinum</i> )		
Bovine Spongiform Encephalopathy	●	
Bovine Viral Diarrhea (BVD)		
Brucellosis ( <i>Brucella abortus</i> )	●	
Circling disease ( <i>Listeria monocytogenes</i> )	●	
Clostridial Enterotoxemia		
Coccidiosis ( <i>Eimeria spp.</i> , <i>Isospora spp.</i> )		
Coronavirus		
<i>Cryptosporidium parvum</i>	●	
<i>Escherichia coli</i> ( <i>E. coli</i> )	●	
Foot and Mouth Disease (FMD)	* ●	●
<i>Giardia spp.</i>	●	
Internal parasites		
Johne's disease ( <i>Mycobacterium paratuberculosis</i> )		
Leptospirosis ( <i>Leptospira spp.</i> )	●	
Lumpy jaw ( <i>Actinomyces bovis</i> )		
Melioidosis ( <i>Burkholderia pseudomallei</i> )	●	
<i>Mycoplasma bovis</i>		
<i>Neospora caninum</i>		
Rotavirus		
<i>Salmonella spp.</i>	●	
Tuberculosis ( <i>Mycobacterium bovis</i> )	●	
Wooden tongue ( <i>Actinobacillus lignieresii</i> )		

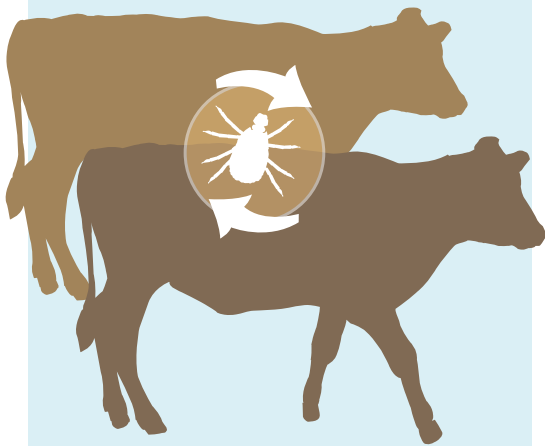


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\* Foot and Mouth Disease—on very rare occasions, FMD virus has been reported to cause *mild* lesions in people. It is not considered to be a public health concern.

# Bovine Disease Exposure Routes: Vector

**Vector:** An insect carrying a disease agent exposes an animal through biting or contact with mucous membranes.



- **Zoonotic Disease:** Spread between animals and humans
- **Foreign Animal Disease (FAD):** Previously eradicated or never found with the U.S. animal population; if diagnosed, it is reportable to state and federal animal health authorities.

	Zoonotic Disease	Foreign Animal Disease
Akabane—Mosquitoes		●
Anaplasmosis ( <i>Anaplasma marginale</i> )—Ticks		
<i>Babesia spp.</i> (Texas cattle fever, tick fever, redwater)—Ticks		●
Bluetongue Virus—Midges		
<i>Corynebacterium pseudotuberculosis</i> (Ulcerative lymphangitis)—Flies		
<i>Dermatophilus congolensis</i> (Rainsores, rainrot)—Flies, ticks	●	
Grubs ( <i>Hypoderma spp.</i> )—Flies		
Heartwater ( <i>Cowdria ruminatum</i> )—Ticks		●
Lumpy Skin Disease Virus—Mosquitoes, Flies		●
Mastitis, contagious—Flies		
Pinkeye ( <i>Moraxella bovis</i> , <i>Mycoplasma bovoculi</i> )—Flies		
Q Fever ( <i>Coxiella burnetii</i> )—Ticks	●	
Rift Valley Fever—Mosquitoes	●	●
Screwworm myiasis—Fly larvae		●
Schmallenberg Virus—Midges, Mosquitoes		
Vesicular Stomatitis Virus (Indiana subtype 1; New Jersey subtype) —Mosquitoes	●	
Vesicular Stomatitis Virus (Indiana subtypes 2,3) —Mosquitoes	●	●



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