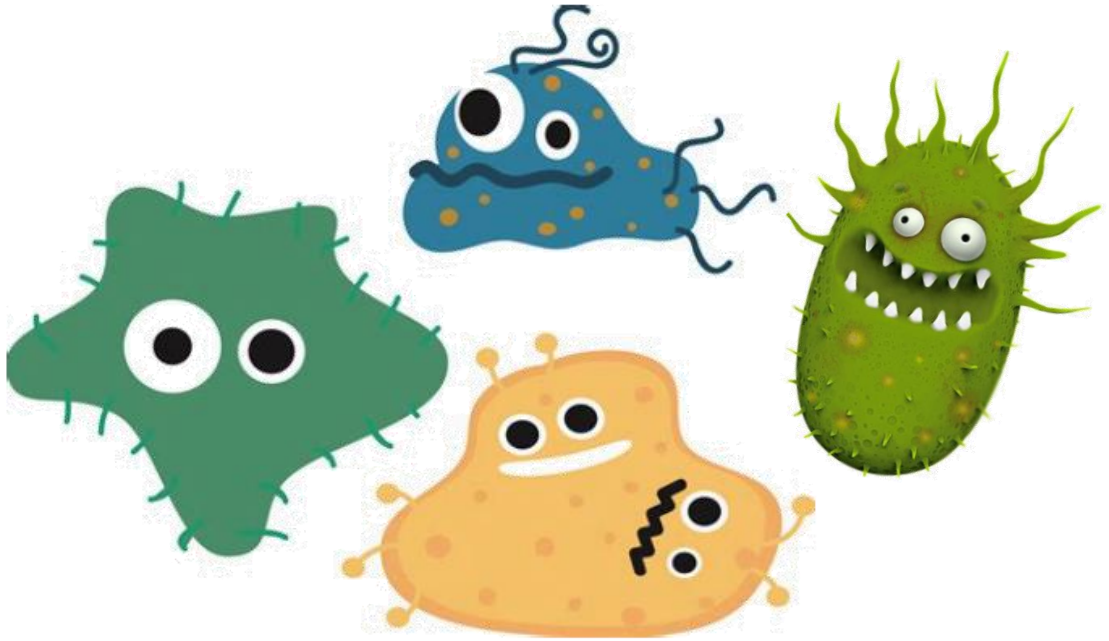
Bacteria Testing 101 with Bonus Q&A

How to interpret the labs?

WHAT WE WILL COVER TODAY

- Types of Water Loss by Category
- Bacteria Testing
  - Total Coliform, E. Coli and Enterococci
  - Endotoxin
  - Actinomycetes
- Bonus Q&A

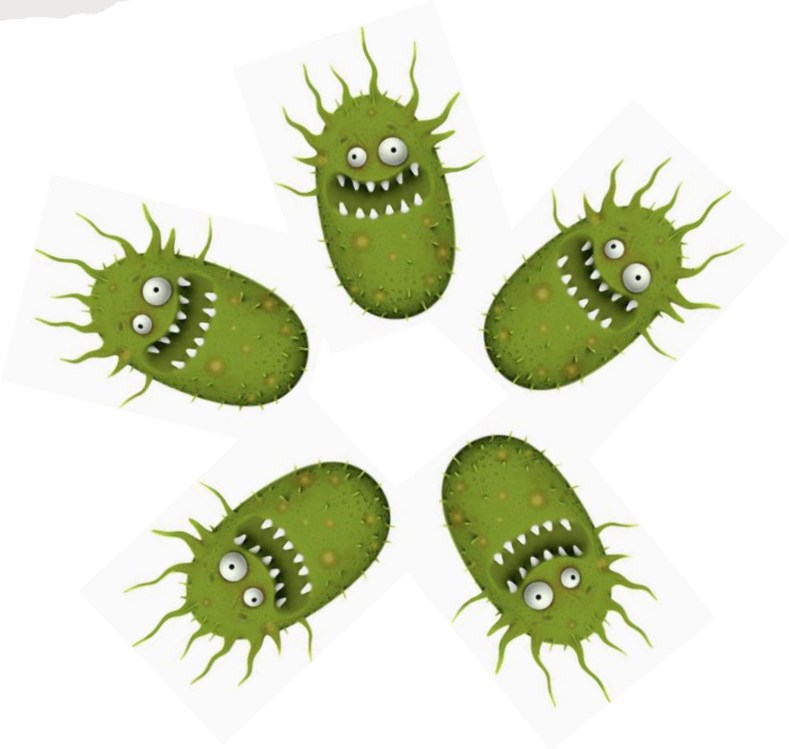


TYPES OF WATER LOSS BY CATEGORY

Clean Water Category 1	Gray Water Category 2	Black Water Category 3
• Water Supply Line • Tub or Sink Overflow • Appliance Malfunctions With Water Supply Line • Melting Ice or Snow • Falling Rainwater • Broken Toilet Tank • Toilet Bowl with No contaminants	• Dishwasher or Washing Machine Discharge • Toilet Bowl with Urine • Seepage from Hydrostatic Pressure • Broken Aquariums • Water Beds	• Sewage • Toilet Bowl with Feces or Origination beyond the P-Trap • Flooding from Seawater or Rising Rivers and Streams • Wind-Driven Rain from Hurricanes or Tropical Storms

Common Bacteria in Water Damage Homes

- Total Coliforms, E. Coli and Enterococci
- Endotoxins
- Actinomycetes or Actinobacteria



Total Coliforms, E. Coli and Enterococci

- Sewage Losses
- Category 3 Water Losses
- Feces of Warm-Blooded Animals

SAMPLING METHOD FOR SEWAGE LOSS

- Utilization of a Sterilized Swab
- Sampling Surface Areas of Where Water Migrated
- Cultured Sample

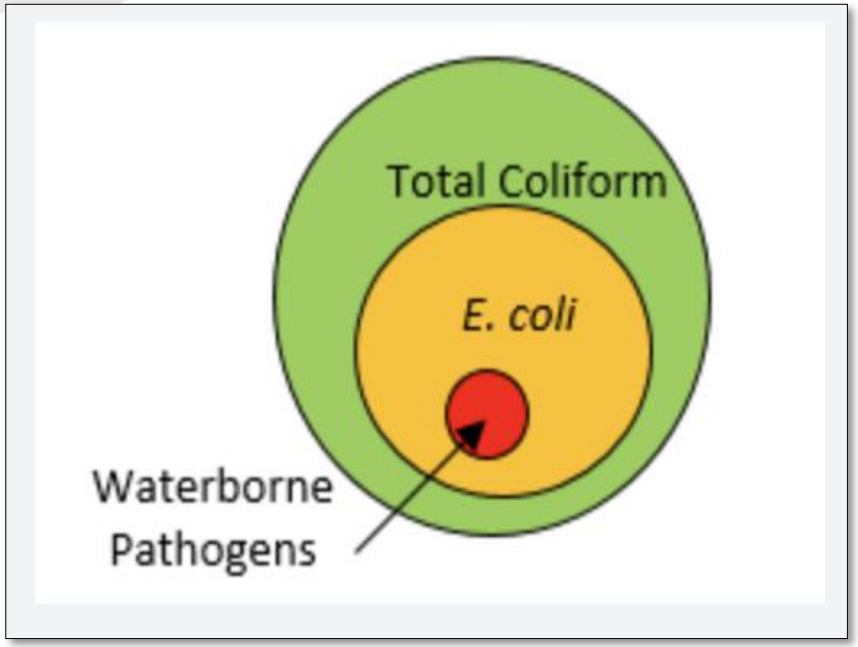
SEWAGE CONTAMINATION TESTING

Test Report: Sewage Contamination in Buildings

Method: Modified SM 9223B, Modified ASTM Method D6503-99, and EMSL M117 for Swab Samples

Sample	Sampling Location Date/Time Collected	Total Coliform Present/Absent	*E. coli* Present/Absent	*Enterococci* Present/Absent
332105168-0001		Present	Absent	Absent

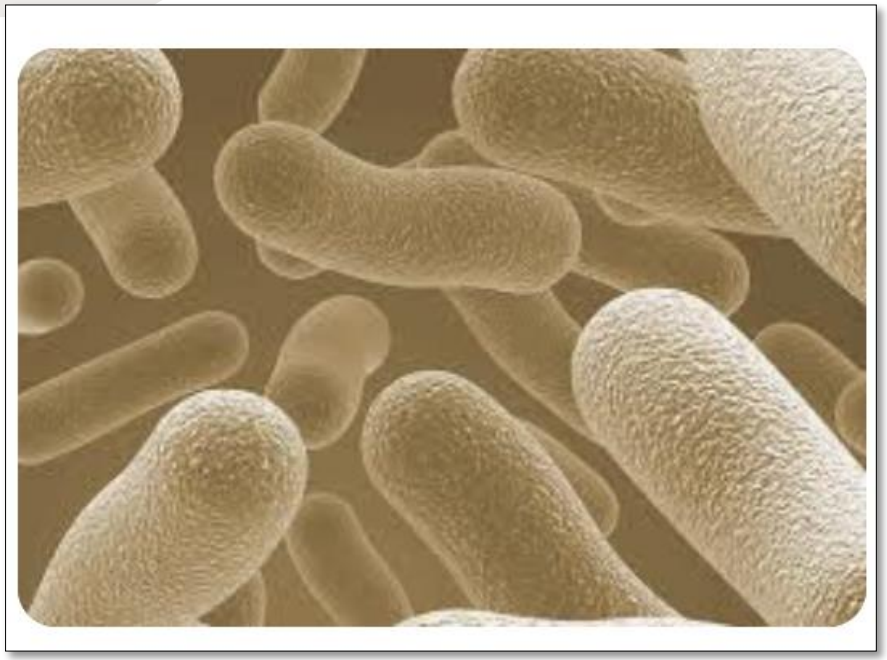
WHY IT'S IMPORTANT TO TEST AFTER A SEWAGE LOSS?



- Health Hazard
- To Validate the Existence of Pathogens in your Home
- Helps Establish a Remediation Strategy
- Individuals that have Health Issues
- Enables your Doctor to Compare their Medical Laboratory Findings to Environmental Laboratory Findings in the Home

ENDOTOXINS

- Gram Negative Bacteria
- Substance (Toxin) bound to the Bacteria Cell Wall
- Released when the Bacteria Ruptures or Disintegrates
- Harbors in the Dust



SAMPLING METHOD ENDOTOXINS

- Collection of dust from various rooms throughout the home
  - A Swifter Cloth
    - Endotoxins are collected in the same way as an ERMI using a swifter cloth.
    - Reference of collection method - Mini Class 3: ERMI

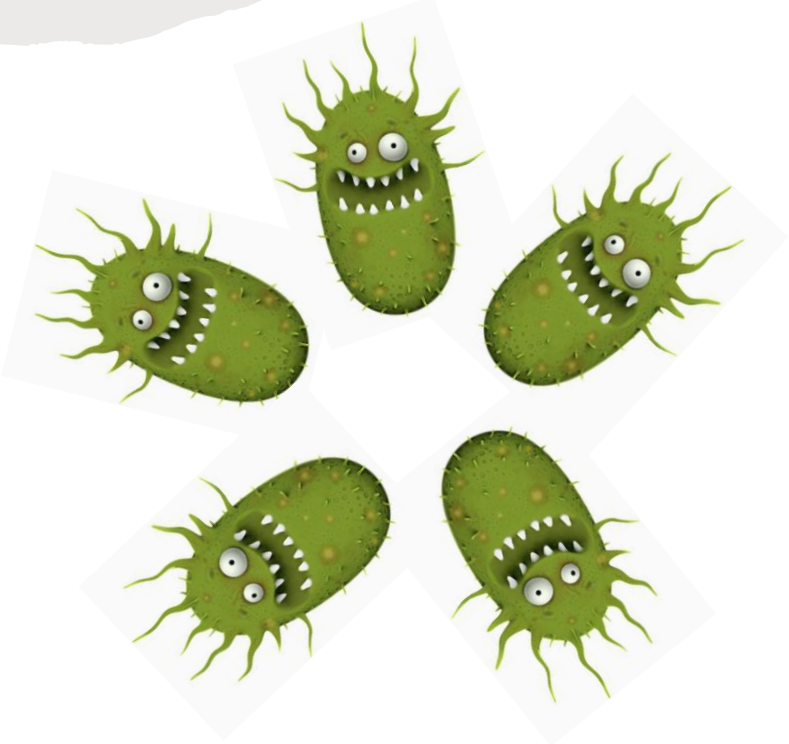
ENDOTOXIN TESTING

ENDOTOXIN RESULTS

Reference Number	Locations	Result EU/mg
301034-3	Ambient Living Area (Home Screen)	**303**

Color-coded interpretation	
If 200 or below	Normal levels.
If between 200 to < 1000	Borderline. Further remediation and re-assessment is indicated.
If greater than 1000	Remediation is needed.

WHY IT'S IMPORTANT TO TEST YOUR HOME FOR ENDOTOXINS?



- Health Hazard
- To validate the existence of endotoxins in your home
- Helps establish a remediation strategy
- Individuals that have health Issues
- Enables your doctor to compare their medical laboratory findings to environmental laboratory findings in the home

Actinomycetes or Actinobacteria

- Gram Positive Bacteria
- Characteristically Similar Mold
- Spores
- MVOCs
- Biotoxins
- Harbors in the dust

SAMPLING METHOD ACTINOMYCETES

- Collection of dust from various rooms throughout the home
  - A Swifter Cloth
    - Actinomycetes are collected in the same way as an ERMI using a swifter cloth.
    - Reference of collection method - Mini Class 3: ERMI

ACTINOMYCETES TESTING

Actino Score

Actino Score	22

Color-coded interpretation	
10 or below	Indicative of a Healthy Building
Between 11 to 15	Further investigation needed
Greater than 15	Suggestive of Building Related Illness.

	Total Species	Pathogen Species
Bacteria	2,117	131
Actino	558	41

Summary of bacteria's Order

Orders Detected	Abundance BE/mg	Familes	Abundance	Diversity	Pathogenic
Actinomycetales	855,966	39	41	17.3	41
Bacillales	251,363	13	12	5.8	16
Rhodospirillales	151,257	3	7	1.3	0
Deinococcales	107,798	2	5	0.9	0
Rhodobacterales	89,901	1	4	0.4	0
Burkholderiales	86,553	5	4	2.2	5
Lactobacillales	67,138	6	3	2.7	13
Sphingobacteriales	49,446	4	2	1.8	1
Rhizobiales	44,924	13	2	5.8	1
Pseudomonadales	43,460	2	2	0.9	8

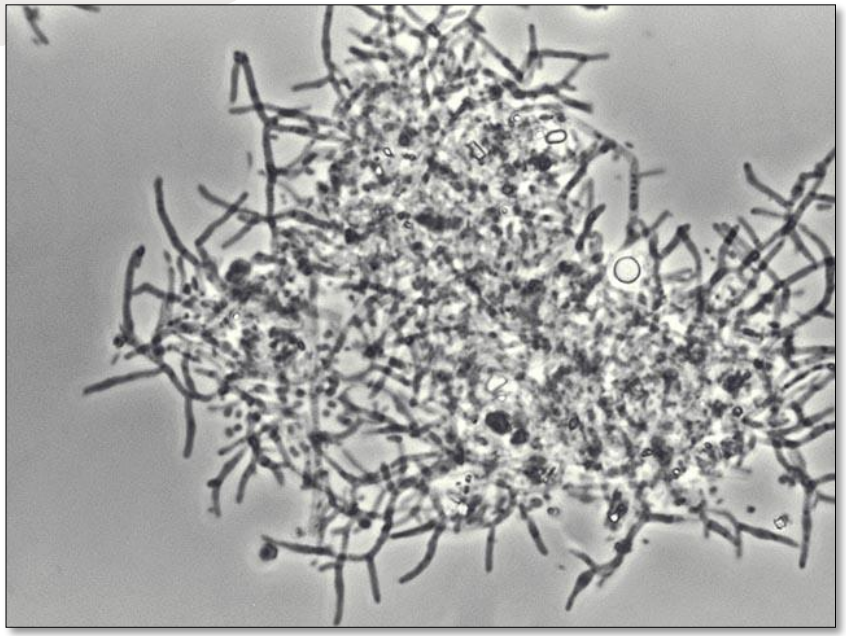
(*) 100 fold higher than normal. P = Human Pathogen
(* *) 1,000 fold higher than normal.

Normal values is based on bacteria distribution on 1,000 US homes.

Actino (Species + Pathogen Species)

	Genus	Species	B.E/mg		Comments	
1	Acidothermus	Cellulolyticus	582		* *	
2	Actinoallomurus	Yoronensis	540			
3	Actinomyces	Canis	1,122	P		
4	Actinomyces	Odontolyticus	2,368	P		
5	Actinomycetospora	Corticicola	415		* *	
6	Actinoplanes	Friuliensis	748		* *	
7	Actinotalea	Azotivora	623		* *	
8	Actinotalea	Ferrariae	498		* *	
9	Aeromicrobium	Ginsengisoli	498			
10	Aestuariimicrobium	Kwangyangense	1,080		* *	
11	Allokutzneria	Oryzae	582		* *	
12	Angustibacter	Aerolatus	498		* *	
13	Angustibacter	Luteus	415		* *	
14	Arsenicicoccus	Bolidensis	76,725		* *	3.7 %
15	Arthrobacter	Agilis	26,752		* *	
16	Arthrobacter	Bergerei	2,160		* *	
17	Arthrobacter	Citreus	582		* *	
18	Arthrobacter	Crystallopoietes	1,412	P	* *	
19	Arthrobacter	Kerguelensis	415		* *	
20	Arthrobacter	Livingstonensis	6,771		* *	
21	Arthrobacter	Nitroguajacolicus	914		* *	
22	Arthrobacter	Protophormiae	2,742			
23	Arthrobacter	Psychrolactophilus	582			
24	Arthrobacter	Stackebrandtii	10,967		*	
25	Austwickia	Chelonae	748		* *	
26	Blastococcus	Aggregatus	10,884			
27	Blastococcus	Endophyticus	2,285		* *	
28	Blastococcus	Jejuensis	4,652		* *	
29	Blastococcus	Saxobsidens	1,205		* *	
30	Brachybacterium	Muris	997			
31	Brachybacterium	Paraconglomeratum	1,869		* *	
32	Brachybacterium	Tyrofermentans	2,035			
33	Branchiibius	Hedensis	2,285		* *	
34	Brevibacterium	Aurantiacum	831		* *	
35	Canibacter	Bacterium	2,326		* *	
36	Cellulomonas	Aerilata	623		* *	
37	Cellulomonas	Cellasea	1,329			
38	Cellulomonas	Composti	498			
39	Cellulomonas	Marina	498		* *	
40	Chryseoglobus	Frigidaquae	997		* *	
41	Citricoccus	Yambaruensis	1,205		* *	
42	Corynebacterium	Auriscanis	10,967	P	*	
43	Corynebacterium	Doosanense	1,579			
44	Corynebacterium	Kroppenstedtii	872	P		
45	Corynebacterium	Lactis	4,528		* *	
46	Corynebacterium	Pilbarense	1,163		* *	
47	Corynebacterium	Simulans	415	P		
48	Corynebacterium	Singulare	498		* *	
49	Corynebacterium	Thomssenii	457	P	* *	
50	Corynebacterium	Tuberculostearicum	10,260	P		
51	Cryobacterium	Arcticum	789		* *	
52	Cryptosporangium	Mongoliense	1,620		* *	
53	Curtobacterium	Flaccumfaciens	997	P	* *	
54	Dermacoccus	Abyssi	3,406			
55	Dermacoccus	Nishinomiyaensis	41,000		*	
56	Dietzia	Alimentaria	415			
57	Dietzia	Cinnamea	498			
58	Dietzia	Maris	1,952			
59	Enteractinococcus	Coprophilus	415		* *	
60	Flexivirga	Alba	2,160		* *	
61	Fodinibacter	Luteus	1,412		* *	
62	Friedmanniella	Antarctica	1,122			
63	Friedmanniella	Flava	748		* *	
64	Friedmanniella	Lacustris	16,159		* *	
65	Friedmanniella	Lucida	2,575			
66	Geodermatophilus	Saharensis	1,080		* *	
67	Geodermatophilus	Terrae	4,112		* *	
68	Gordonia	Terrae	415	P	* *	
69	Intrasporangium	Chromatireducens	4,694		* *	
70	Intrasporangium	Mesophilum	1,205		* *	
71	Janibacter	Alkaliphilus	6,937		* *	
72	Janibacter	Cremeus	3,988		* *	
73	Jatrophihabitans	Soli	2,451		* *	
74	Jatrophihabitans	Suffuscus	1,122		* *	

WHY IT'S IMPORTANT TO TEST YOUR HOME FOR ACTINOMYCETES?



- Health Hazard
- To validate the existence of Actinomycetes in your home
- Helps establish a remediation strategy
- Enables your doctor to compare their medical laboratory findings to environmental laboratory findings in the home
- Individuals that have health Issues

PREVENTION

- Keep your place dry
- Eliminate Clutter
- Removal of the dust
- Routine cleaning regimen
- Clean pets paws when bringing them back into the home
- Implement air filtration units
- Proactive maintenance

BONUS - Q&A

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