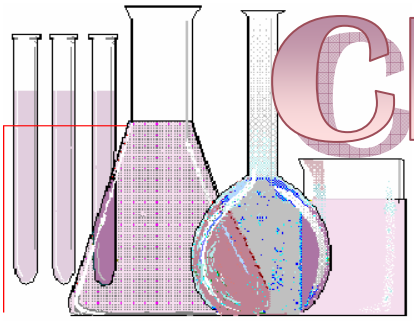
Maryland Department of Health & Mental Hygiene

A Publication of Maryland's State Public Health Laboratory



CRITICAL LINK

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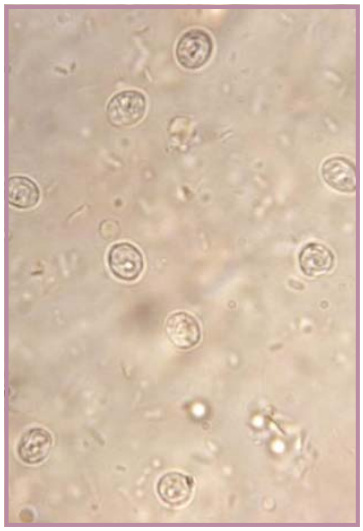
Maryland Department of Health & Mental Hygiene

May 2008 Volume 12, Number 5

Recreational Water Illnesses & Prevention

Recreational water venues are important sites for exercise and leisure. The week before Memorial Day (May 19–25, 2008) has been designated as National Recreational Water Illness Prevention Week. To make this summer a healthy swimming experience, the Department of Health and Mental Hygiene (DHMH), the Maryland Department of the Environment (MDE), and the Environmental Protection Agency (EPA) urge swimmers to continue to enjoy swimming, but only after adopting healthy swimming behaviors to reduce the risk of Recreational water illnesses (RWIs).



Cryptosporidium is a microscopic parasite that is protected by an outer shell that allows it to survive outside the body for long periods, and makes it resistant to chlorine disinfection. (Source: CDC Public Health Image Library)

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Farmstead Cheese Production

Farmers in Maryland and elsewhere are looking for additional ways to supplement farm income and maintain profitability. One way may be to produce "farmstead" cheese, defined as cheese made on a farm with milk produced by animals on that farm. Farmstead cheese of high quality and limited production can be profitable because consumers are often willing to pay more for specialty cheese than commodity cheese.

In some states, as much as 80%[1] of farmstead cheese is raw (unpasteurized) milk cheese. Currently, Maryland prohibits the sale of unpasteurized milk cheese because, historically, unpasteurized milk and milk products have been associated with outbreaks of disease (e.g., tuberculosis, brucellosis, and streptococcal infections). In the United States, the sale of raw milk cheeses aged less than 60 days is illegal.

However, over the past 50 years, there have rarely been outbreaks of illness from aged raw-milk cheese that can be blamed on raw milk. The U.S. Food and Drug Administration allows the sale of raw-milk cheeses "cured at a temperature of not less than 35°F for not less than 60 days"[2] Nonetheless, cheese can be contaminated with such common pathogens as *Listeria monocytogenes* and *Salmonella* species at any stage of cheese production (e.g., milking barn, dairy, aging room) and the legitimate concerns of the public continue to call for some level of regulatory oversight.

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Recreational Water Illnesses & Prevention

RWIs and waterborne disease outbreaks are various illnesses caused by swallowing, breathing, or having contact with contaminated water from swimming pools, spas, lakes, rivers, or oceans. These RWIs can cause a wide variety of symptoms, including gastrointestinal, skin, ear, respiratory, eye, neurological, and wound infections. (Table 1.)

Table 1. Recreational Water Illness (Source: http://www.cdc.gov/healthyswimming/fact_sheets.htm#Illnesses)

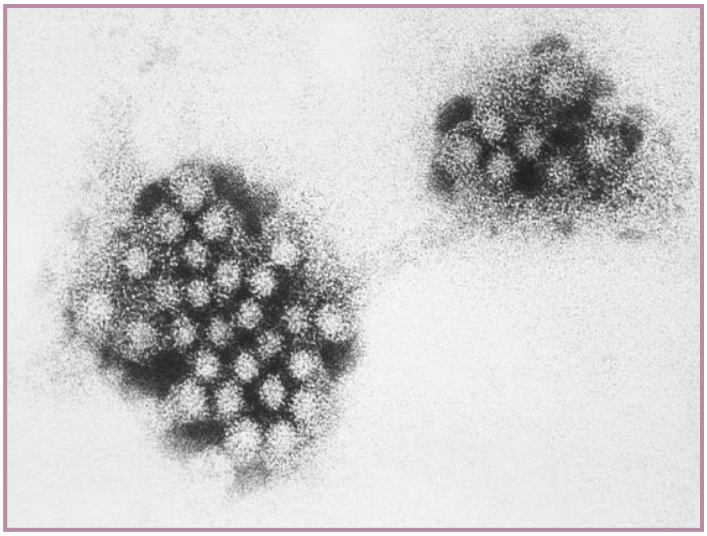
Diarrhea
Cryptosporidiosis
E. coli O157:H7
Giardia
Norovirus
Salmonellosis
Shigellosis (bacterial dysentery)
Viral Gastroenteritis
Skin, Ear, and Eye Infections
Molluscum (Molluscum Contagiosum)
Conjunctivitis *(Adenovirus)*
"Hot Tub Rash" *Pseudomonas dermatitis*
"Swimmer's Ear" Otitis Externa
"Swimmer's Itch" Cercarial Dermatitis
Respiratory Infections
Pharyngoconjunctival Fever (Adenovirus)
Legionellosis: Legionnaire's Disease (LD) and Pontiac Fever
Mycobacterium avium complex
Neurologic Infections
Aseptic Meningitis (Enterovirus Infection)
Naegleria Infection
Wound Infections
Vibrio parahaemolyticus
Vibrio vulnificus
Other Illnesses
Hepatitis A (viral)

RWIs or waterborne disease outbreaks constitute a significant health burden in all countries. In 2003-2004, there were 62 reported outbreaks (2,698 cases) associated with recreational water in the United States. The most commonly reported RWI is diarrhea. Diarrheal illnesses can be caused by such pathogens as *Cryptosporidium* (Crypto), *Giardia*, *Shigella*, norovirus and *E. coli* O157:H7.[1]

However, the scale and the size of RWI, injury, and death caused by improperly used or maintained recreational bathing areas and facilities remain underestimated and underappreciated.

Microorganisms in Recreational Water

A variety of microorganisms can be found in recreational waters, such as swimming pools, spas, and beach waters, which may be introduced into the human body. The



An electron micrograph of the Norovirus, with 27-32nm-sized viral particles. (Source: CDC Public Health Image Library)

main etiological infectious agents include *Campylobacter*, *Vibrio cholera*, *Salmonella spps*, *Escherichia coli*, *Shigella spp*, *Cryptosporidium*, *Giardia lamblia*, *Entamoeba histolytica*, Norovirus, Enterovirus, Rotavirus, and Hepatovirus.

The risk of RWI or infection has been linked to fecal contamination of the water. In many cases, this is caused by feces released by bathers or contaminated source water. Many of the outbreaks related to swimming pools and similar environments have occurred because disinfection was not applied or was inadequate. Non-fecal human shedding into the pool water or the surrounding area is also a potential source of pathogenic organisms.

(Continued on page 3)

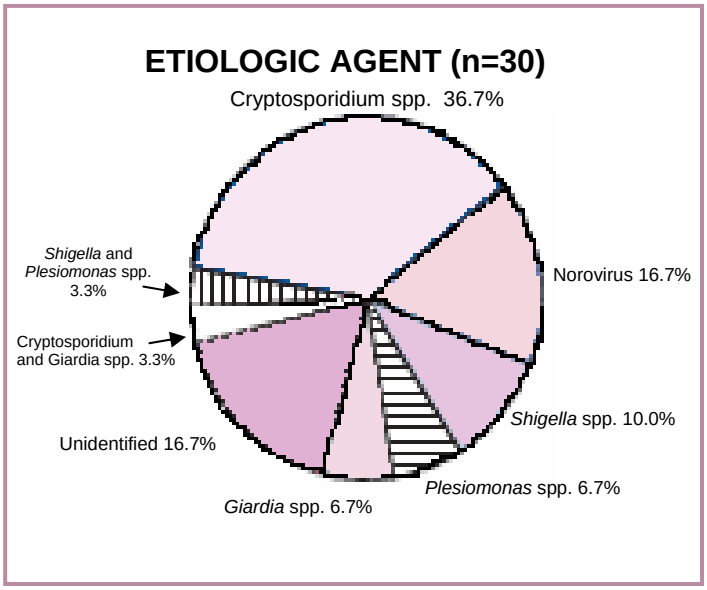


Figure 1: Recreational water associated outbreaks of gastroenteritis by etiologic agent, 2003-2004. (Source: http://www.cdc.gov/mmwr/preview/mmwrhtml/ss5512a1.htm)

(Continued from page 2)

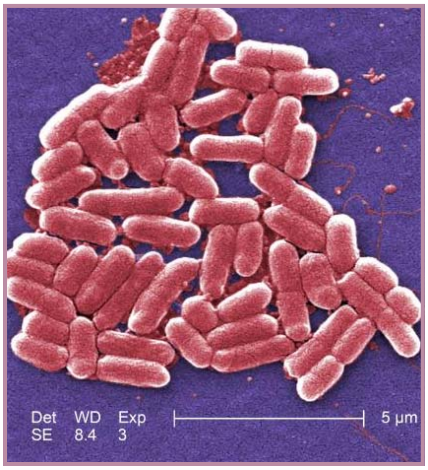
Recreational Water Illnesses & Prevention

Some bacteria, most notably non-fecally-derived bacteria, may accumulate in biofilms and present an infection hazard. In addition, certain free-living aquatic bacteria and amoebae can grow in pools, natural spa or hot tub waters, in pool or hot tub components or facilities, and on other wet surfaces within the facility. These may cause a variety of respiratory, dermal, or central nervous system infections or diseases. Outdoor pools may also be subject to microorganisms from pets and wildlife.

Waterborne Disease Outbreaks

Surveillance of waterborne disease in the U.S. is outbreak-based. Therefore, cases may be under-reported. A first challenge, common to all waterborne disease surveillance systems, is capturing all incidences of infection, as not all infections result in clinical disease. The disease may be severe or mild, not leading to the patient seeking medical assistance. A second challenge might be in unequivocally identifying the sources of infections, as water is not the only exposure pathway for many of the pathogens of interest. Moreover, the case may be a primary or secondary infection.

Outbreak detection and investigation of waterborne disease outbreaks in the U.S. occurs mostly at the state level, and are only rarely carried out at the federal level. However, waterborne disease outbreaks are reviewed by the Centers for Disease Control and Prevention (CDC) and the United States Environmental Protection Agency (EPA). The EPA has based its 1986 water quality indicator thresholds on the risk of gastroenteritis, although other diseases have been associated with recreation in contaminated waters (EPA, 2002). A full review of the relevant epidemiological literature is summarized in the EPA's 2002 National Beach Guidance and Required Performance Criteria for Grants.



Under a magnification of 6836x, this colorized scanning electron micrograph (SEM) depicted a number of Gram-negative *Escherichia coli* bacteria of the strain O157:H7. (Source: CDC Public Health Image Library)

The EPA uses two kinds of criteria for indicator organism densities, the single sample maximum and the steady-state geometric mean (GM, 5 measurements taken evenly spaced over a 30 day period). For high and medium priority fresh water beaches, the single sample maximums are 61 colony forming units (CFU) or most probable number (MPN) or 235 CFU/100 ml for enterococci and *E. coli*, respectively. For marine (salt) water, the enterococci criteria is 104 CFU/ml. These numbers are single sample maximums with an upper 75% limit, based on a risk of 8 swimmers per 1,000 developing gastroenteritis for the fresh water and 19 swimmers developing gastroenteritis for marine water. For the steady-state GM, the criteria for enterococci and *E. coli* are 33 and 126 CFU/100ml for fresh water, respectively, and 35 CFU/100ml enterococci for marine water.

Studies showed that enterococci and, to a lesser extent, *E. coli* are adequate indicators of gastrointestinal (GI) illness in marine water, but fecal coliforms are not. There was evidence that the risk of GI illness was considerably lower in studies with indicator densities below the guide-

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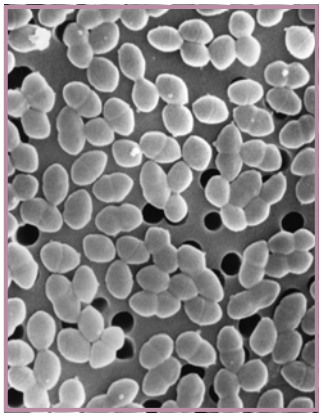
lines proposed by the EPA for both enterococci and *E. coli*, providing support for use of these values for regulatory purposes. In fresh water, *E. coli* was a more reliable and consistent predictor of GI illness than enterococci.

Health Departments Take Action

When laboratory results from the samples show an indicator organism density exceeding the water quality standard, the county health department will issue a public notification of advisory or closure. If known pollution exists (e.g., combined sewer overflow, failing sewer infrastructure, waste water treatment discharge), the county will close the beach and provide prompt public notification. The beach may be opened or the advisory lifted only after subsequent bacteriological sampling results in indicator densities that satisfy the applicable water quality standards. When an emergency health hazard is caused by any dangerous contaminant or condition, the approving authority or the Maryland Department of the Environment (MDE) may immediately order the beach closed and summarily order the suspension of the operating permit, for Permitted Designated Natural Bathing Areas (NBAs).

The current recommended criteria involve culturing and enumerating fecal indicator bacteria (*Enterococcus spp*. or *E. coli*). One shortcoming of these methods is that the bacteria require at least 18 to 24 hours to grow visible colonies for subsequent enumeration. Recent research indicates the quality of water impacted by fecal contamination can change rapidly, and thus, the current criteria based on indicator organisms that require 18 hours or more to produce results can lead to either unnecessary beach closings or the exposure of swimmers to water of poor quality. The EPA has developed a Critical Path Science Plan for Development of New or Revised Recreational Water Quality Criteria. It articulates the essential research and science the EPA will conduct between 2007-2010 to establish the scientific foundation for new or revised recreational water quality criteria.



This scanning electron micrograph (SEM) depicted numbers of bacteria, which were identified as being Gram-positive *Enterococcus sp.* bacteria.

Laboratories Administration's Role

Microbiological examination of recreational water is conducted by the Maryland Department of Health and Mental Hygiene's Laboratories Administration using EPA standard methods. The Laboratories Administration has three locations in Maryland: the Central Laboratory in Baltimore, the Eastern Shore Regional Laboratory in Salisbury, and Western Maryland Regional Laboratory in Cumberland. Each of these laboratories is certified to examine water, dairy, and food samples in compliance with State and federal regulations and guidelines.

Figure 2 presents enterococci results for 2007 beach samples from Anne Arundel County. Of a total of 2,493 samples, 66 samples (2.6%) showed enterococci exceeding the single sample maximum of 104 CFU/100ml. Samples collected in July had the highest percentage (4.6%) showing over-numbered enterococci, June had 4%, May had 2%. None of the samples from August and September exceeded the limit of 104 CFU/100ml.

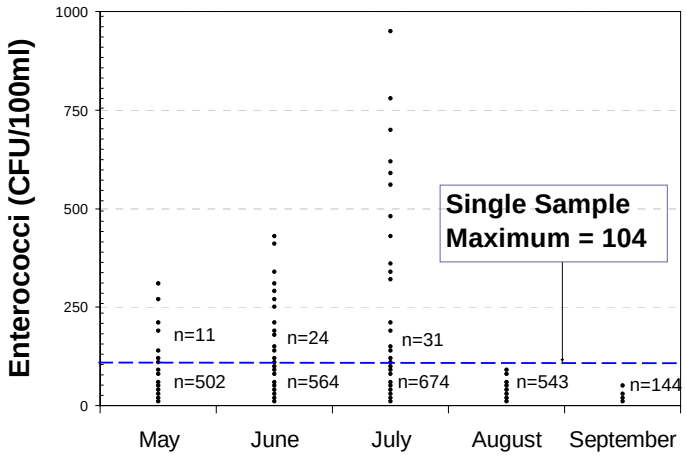


Figure 2: Microbiological examination of beach water samples in Anne Arundel County in 2007. (Source: Laboratories Administration, Division of Environmental Microbiology)

Prevention and Control of RWIs

Awareness of RWIs and healthy swimming behaviors play an important role in stopping transmission of organisms that cause RWIs. Germs on and in swimmers' bodies end up in the water and can make other people sick. Even healthy swimmers can get sick from RWIs, but the young, the elderly, pregnant women, and immunosuppressed persons are especially at risk. Specific actions you can take to promote healthy swimming include:

- Do not swim when you have diarrhea;
- Do not swallow pool water or get pool water in your mouth;
- Shower before swimming (children too!);
- Wash your hands after using the toilet or changing diapers;
- Take children on bathroom breaks or change diapers often.

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Recreational Water Illnesses & Prevention

- Avoid swimming in natural bathing area within 48 hours of rain;
- In the case of heavy rainfall, follow local health department's advisory for recreational activities;
- Visit a doctor when GI symptoms occur following swimming or activity in a pool or NBA with unknown sanitary conditions.

This article was written by the staff of the Water Laboratory of the Division of Environmental Microbiology.

Recommended additional reading

Guidelines for safe recreational water environments. Volume 1, Coastal and fresh waters. WHO, 2003

EPA's 2002 *National Beach Guidance and Required Performance Criteria for Grants*

Colford, J.M., Jr., T.J. Wade, K.C. Schiff, C.C. Wright, J.F. Griffith, S.K Sandhu, S. Burns, M. Sobsey, G. Lovelace, and S.B. Weisberg. 2007. *Water quality indicators and the risk of illness at beaches with nonpoint sources of fecal contamination*. Epidemiology 18(1):27-35.

Wade, T.J., R.L. Calderon, E. Sams, M. Beach, K.P. Brenner, A.H. Williams, and A.P. Dufour, 2006. *Rapidly Measured Indicators of Recreational Water Quality are Predictive of Swimming. Associated Gastrointestinal Illness*. Environmental Health Perspectives, 114(1): 24-28.

Wade TJ, Pai N, Eisenberg JN, Colford JM Jr. Do U.S. Environmental Protection Agency water quality guidelines for recreational waters prevent gastrointestinal illness? A systematic review and meta-analysis.nEnviron Health Perspect. 2003 Jun;111(8):1102-9. Review.

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[1] http://www.cdc.gov/healthyswimming/

(Continued from page 1)
Farmstead Cheese Production

In March 2008, six members of the Maryland House of Delegates introduced House Bill 1624, entitled "Milk Products—Farmstead Cheese Production." This bill authorizes the Secretary of Health to establish a five-year pilot farmstead cheese program by adopting oversight regulations and issuing up to five milk processor-farmstead cheese producer permits. This bill also sets up a separate laboratory testing fund to support laboratory services associated with the production of farmstead cheese.

Developing and implementing regulatory oversight that both protects the public health and allows producers to earn a fair profit will require much thought, experimentation, and compromise on the part of all stakeholders. For this reason, it is expected to take several years of possible trial and error to strike an acceptable balance. Even in the absence of regulatory oversight, the path to farmstead cheese profitability is not assured. The 2006 Vermont marketing study[1] reported a majority of farmstead cheese producers had to invest between $40,000 and $100,000 to establish production, and reached a very small margin of profit only after three to five years of operation. In the same report, a New England distributor suggested that cheesemakers would need to produce at least 20,000 pounds a year to meet demand and generate profit.

The Laboratories Administration and its Environmental Microbiology Division will have an important role to play in implementing this pilot program by helping ensure both the safety and profitability of Maryland's farmstead cheese industry. This role will be based on identifying what safety testing will be required and what microbiological standards must be met. We will need to answer many questions. Should testing be performed on the raw milk or only on the finished cheese product? Should we perform somatic cell counts, coliform counts, and tests for specific pathogens? Do we set Maryland standards independently or adopt those of another organization such as the European Union?[3] To what extent should safety regulations cover farmstead cheese production practices? Should we test, in addition, moisture and milkfat contents to allow interstate sale?

Food (cheese) safety testing can be expensive for both the farmer and the Laboratories Administration. That is why House Bill 1624 authorized a special fund to retain fees for farmstead cheese laboratory services. Monies from this fund will be used to pay for laboratory labor, instrumentation, and supplies. Although actual analytical costs can't be projected until the types and number of tests have been established, testing fees will probably be based on some type of batch testing.

House Bill 1624 will take effect as law on October 1, 2008. The Laboratories Administration looks forward to working with the Department of Health and Mental Hygiene's Division of Food Control, the State's cattle and goat dairy farmers, and other stakeholders in implementing this farmstead cheese pilot study. Questions about the bill and the new program may be directed to the Community Health Administration's Division of Milk Control by calling 410-767-8429 or the Laboratories Administration's Division of Environmental Microbiology by calling 410-767-5074.

This article was written by Dr. Jack DeBoy.

References

[1] Vermont Farmstead Cheese Marketing Study. Jan.-Mar., 2006. www.vhcb.org/pdfs/farmsteadcheesereport.pdf

[2] 21 CFR 133.150

[3] Vermont Cheese Council: Raw Milk Study, European Union Directives. www.vtcheese.com/vtcheese/rawmilk_files/rawmilk4.html

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Several of the Laboratories Administration's Water Lab Scientists testing water samples; from left to right, Gerald Simonton, Ken Kuschwara, and Brandon Hall.

Laboratory Statistics

NS – Not Speciated
NT – Non-Typeable
VRE – Vancomycin Resistant
SP – Species
NG – No Growth

* This genus has recently been given a new genus name. The genus name in parenthesis is the old name.
** Formerly a part of the *Trichosporon beigelii* complex.
***Alpha streptococci other than *S. pneumoniae* and *Enterococcus*

REPORTED 2/01/08 - 2/29/08

ENTERIC BACTERIOLOGY

GENUS SEROVAR	SEX	AGE	#	JURISDICTION
CAMPYLOBACTER COLI				
	M	44	1	MONTGOMERY
	M	69	1	BALTIMORE CITY
	M	21	1	OUT OF STATE
CAMPYLOBACTER JEJUNI				
	F	20	1	BALTIMORE
	F	20	1	BALTIMORE
	U	40	1	PRINCE GEORGE'S
ESCHERICHIA COLI				
	F	21	1	BALTIMORE
	F	34	1	BALTIMORE CITY
	F	62	1	BALTIMORE CITY
	F	79	1	BALTIMORE CITY
	U	18	1	OUT OF STATE
	U	50	1	OUT OF STATE
	M	1	1	OUT OF STATE
SALMONELLA DUBLIN				
	M	72	1	FREDERICK
SALMONELLA ENTERITIDIS				
	F	17	1	BALTIMORE
	F	79	1	BALTIMORE
	F	78	1	BALTIMORE
	M	1	1	BALTIMORE
	F	21	1	CARROLL
	M	1	1	MONTGOMERY
	M	9	1	BALTIMORE CITY
	M	100	1	BALTIMORE CITY
	M	44	1	BALTIMORE CITY
	U	1	1	BALTIMORE CITY
	U	0	1	BALTIMORE CITY
	U	22	1	BALTIMORE CITY
	F	34	1	BALTIMORE CITY
	F	39	1	BALTIMORE CITY
	F	17	1	OUT OF STATE
	U	5	1	OUT OF STATE
	U	10	1	OUT OF STATE
	U	33	1	OUT OF STATE
SALMONELLA HEIDELBERG				
	F	8	1	WASHINGTON
SALMONELLA ISTANBUL				
	F	1	1	BALTIMORE
SALMONELLA ORANIENBURG				
	F	25	1	BALTIMORE CITY
SALMONELLA SER I 13,23:C:EN,Z15				
	U	0	1	UNKNOWN

SALMONELLA TYPHIMURIUM VAR COPENHAGEN

U	41	1	TALBOT
M	0	1	BALTIMORE CITY

SHIGELLA FLEXNERI

F	46	1	BALTIMORE
M	52	1	HARFORD
M	27	1	BALTIMORE CITY
U	0	1	BALTIMORE CITY

SHIGELLA FLEXNERI IV:3,4

M	0	1	UNKNOWN

VIBRIO PARAHAEMOLYTICUS

M	29	1	BALTIMORE

TOTAL **44**

ISOLATES – THROAT CULTURES

COUNTY	GROUP A[1]	NON-GROUP A
ALLEGANY	6	19
BALTIMORE	2	0
CARROLL	0	1
FREDERICK	0	1
PRINCE GEORGE'S	0	3
QUEEN ANNE'S	1	0
SOMERSET	2	6
WICOMICO	3	11
BALTIMORE CITY	3	4
TOTAL	**17**	**45**

[1] *Streptococcus pyogenes*

BACTERIOLOGY IDENTIFICATIONS
Referrals

GENUS SPECIES

SOURCE	#	JURISDICTION
HAEMOPHILUS INFLUENZAE NON-TYPABLE		
BLOOD	1	ANNE ARUNDEL
BLOOD	1	BALTIMORE
BLOOD	3	BALTIMORE CITY
NASOTRACH	1	BALTIMORE CITY
BLOOD	1	CARROLL
BLOOD	4	MONTGOMERY
BLOOD	1	WASHINGTON DC
HAEMOPHILUS INFLUENZAE SEROTYPE E		
BLOOD	1	PRINCE GEORGE'S
HAEMOPHILUS INFLUENZAE SEROTYPE F		
BLOOD	1	ANNE ARUNDEL
BLOOD	2	BALTIMORE CITY
BLOOD	2	CHARLES
BLOOD	1	MONTGOMERY
BLOOD	1	WASHINGTON
HAEMOPHILUS PARAINFLUENZAE		
BLOOD	2	ALLEGANY

TOTAL **22**

ISOLATES – MISCELLANEOUS

GENUS SPECIES

SOURCE	#	JURISDICTION
ACINETOBACTER LWOFFII		
VAGINA	1	SOMERSET
CORYNEBACTERIUM SPECIES		
ULCER	1	BALTIMORE CITY
ENTEROBACTER CLOACAE		
ULCER	1	FREDERICK
WOUND	1	FREDERICK
ENTEROCOCCUS FAECIUM		
BLOOD	1	BALTIMORE CITY
ESCHERICHIA COLI		
LABIA	1	MONTGOMERY
WOUND	1	WICOMICO
GARDNERELLA VAGINALIS		
VAGINA	4	SOMERSET
KLEBSIELLA OXYTOCA		
SPUTUM	1	FREDERICK
KLEBSIELLA PNEUMONIAE		
BLOOD	1	BALTIMORE CITY
CSF	1	BALTIMORE CITY
SPUTUM	1	FREDERICK
PANTOEA AGGLOMERANS		
WOUND	1	FREDERICK
ABSCESS	1	MONTGOMERY
PREVOTELLA LOESCHEII		
BLOOD	1	BALTIMORE CITY
PROTEUS MIRABILIS		
ABSCESS	1	CARROLL
PSEUDOMONAS AERUGINOSA		
BLOOD	1	BALTIMORE CITY
ULCER	1	FREDERICK
PSEUDOMONAS PUTIDA		
WOUND	1	FREDERICK
STAPHYLOCOCCUS AUREUS		
UNKNOWN	2	BALTIMORE
BLOOD	4	BALTIMORE CITY
HIP	1	BALTIMORE CITY
THIGH	1	BALTIMORE CITY
WOUND	4	BALTIMORE CITY
BUTTOCK	1	CARROLL
FACIAL	1	CARROLL
UNKNOWN	1	CARROLL
ULCER	1	FREDERICK
UNKNOWN	5	FREDERICK
UNKNOWN	1	HARFORD
LESION	1	MONTGOMERY
LEG	1	PRINCE GEORGE'S
UNKNOWN	1	PRINCE GEORGE'S
VAGINA	1	SOMERSET
SPUTUM	1	WASHINGTON CO
STAPHYLOCOCCUS SPECIES CONGULASE NEGATIVE		
WOUND	1	ALLEGANY
LABIA	1	ANNE ARUNDEL
UNKNOWN	1	BALTIMORE
FINGER	1	BALTIMORE CITY
UNKNOWN	2	CARROLL
FOOT	2	FREDERICK
LEG	1	FREDERICK
UNKNOWN	6	FREDERICK
CHEST	1	MONTGOMERY
SKIN	1	MONTGOMERY
STENOTROPHOMONAS MALTOPHILIA		
WOUND	1	FREDERICK
STREPTOCOCCI BETA HEMOLYTIC GROUP B		
VAGINA	1	CECIL
WOUND	1	FREDERICK
UNKNOWN	2	HOWARD
ENDOCERVICAL	4	PRINCE GEORGE'S
UNKNOWN	13	PRINCE GEORGE'S
STREPTOCOCCUS INTERMEDIUS		
BLOOD	2	BALTIMORE CITY
STREPTOCOCCUS ORALIS		
BLOOD	1	BALTIMORE CITY

TOTAL **91**

SEXUALLY TRANSMITTED DISEASES

GENUS SPECIES	SEX	#	JURISDICTION
SYPHILIS SEROLOGY			
	F	1	ALLEGANY
	M	2	ALLEGANY
	F	2	ANNE ARUNDEL
	M	3	ANNE ARUNDEL
	F	3	BALTIMORE
	M	6	BALTIMORE
	F	4	BALTIMORE CITY
	M	14	BALTIMORE CITY
	U	2	BALTIMORE CITY
	M	1	CARROLL
	M	1	FREDERICK
	F	4	MONTGOMERY
	M	3	MONTGOMERY
	U	4	MONTGOMERY
	F	11	PRINCE GEORGE'S
	M	20	PRINCE GEORGE'S
	F	4	WICOMICO
	M	5	WICOMICO
TOTAL		**90**	
CHLAMYDIA TRACHOMATIS			
	F	1	ALLEGANY
	M	10	ALLEGANY
	F	14	ANNE ARUNDEL
	M	27	ANNE ARUNDEL
	M	11	BALTIMORE
	F	2	BALTIMORE CITY
	M	42	BALTIMORE CITY
	U	2	BALTIMORE CITY
	M	1	CECIL
	F	2	HARFORD
	M	18	HARFORD
	F	1	HOWARD
	M	4	HOWARD
	F	4	KENT
	M	9	KENT
	U	1	KENT
	F	24	MONTGOMERY
	M	32	MONTGOMERY
	U	2	MONTGOMERY
	F	24	PRINCE GEORGE'S
	M	52	PRINCE GEORGE'S
	M	4	SOMERSET
	F	2	WASHINGTON
	M	2	WASHINGTON
TOTAL		**291**	
NEISSERIA GONORRHEAE			
	M	1	ANNE ARUNDEL
	F	1	BALTIMORE
	M	3	BALTIMORE
	M	1	CALVERT
	F	2	CARROLL
	F	1	CHARLES
	M	1	FREDERICK
	F	1	MONTGOMERY
	F	12	PRINCE GEORGE'S
	M	16	PRINCE GEORGE'S
	F	1	ST. MARY'S
	F	1	WASHINGTON
	U	1	BALTIMORE CITY
TOTAL		**42**	

PENICILLIN RESISTANT GONORRHEA STATISTICS

REPORTED QUARTERLY
NO REPORT THIS MONTH

MYCOBACTERIOLOGY

GENUS SPECIES	SEX	AGE	#	JURISDICTION
MYCOBACTERIUM ABSCESSUS				
	M	57	1	PRINCE GEORGE'S
MYCOBACTERIUM AVIUM COMPLEX				
	M	86	1	ANNE ARUNDEL
	F	67	1	BALTIMORE
	F	69	1	BALTIMORE
	M	69	1	BALTIMORE
	M	71	1	BALTIMORE
	M	86	1	BALTIMORE
	M	66	1	BALTIMORE
	M	74	1	BALTIMORE
	F	2	1	BALTIMORE
	M	38	1	BALTIMORE
	M	85	1	BALTIMORE
	F	46	1	FREDERICK
	F	79	1	FREDERICK
	F	84	1	FREDERICK
	M	51	1	FREDERICK
	F	54	1	FREDERICK
	M	63	1	FREDERICK
	M	44	1	MONTGOMERY
	F	84	1	WICOMICO
	F	33	1	BALTIMORE CITY
	F	64	1	BALTIMORE CITY
	M	38	1	BALTIMORE CITY
	F	23	1	BALTIMORE CITY
	M	46	1	BALTIMORE CITY
	F	39	1	BALTIMORE CITY
	M	43	1	BALTIMORE CITY
MYCOBACTERIUM CHELONAE				
	F	46	1	CECIL
MYCOBACTERIUM FORTUITUM				
	M	22	1	MONTGOMERY
	M	87	1	MONTGOMERY
	M	22	1	PRINCE GEORGE'S
	M	61	1	WICOMICO
MYCOBACTERIUM GORDONAE				
	M	69	1	BALTIMORE
	F	45	1	FREDERICK
	M	21	1	FREDERICK
	M	89	1	FREDERICK
	M	28	1	PRINCE GEORGE'S
	M	50	1	TALBOT
	F	10	1	WICOMICO
	M	49	1	WICOMICO
	M	81	1	BALTIMORE CITY
	M	58	1	BALTIMORE CITY
MYCOBACTERIUM TUBERCULOSIS				
	M	73	1	BALTIMORE
	F	28	1	BALTIMORE
	M	47	1	FREDERICK
	M	58	1	MONTGOMERY
	F	38	1	MONTGOMERY
	M	79	1	MONTGOMERY
	M	43	1	MONTGOMERY
	M	56	1	MONTGOMERY
	M	21	1	PRINCE GEORGE'S
	M	80	1	WICOMICO
	F	52	1	BALTIMORE CITY
	M	19	1	BALTIMORE CITY
	F	61	1	BALTIMORE CITY
	M	22	1	OUT OF STATE
MYCOBACTERIUM TUBERCULOSIS COMPLEX				
	M	66	1	ANNE ARUNDEL
	M	22	1	ANNE ARUNDEL
	F	31	1	BALTIMORE
	F	78	1	CALVERT
	F	78	1	CALVERT
	M	40	1	CECIL

M	23	1	HARFORD
F	83	1	MONTGOMERY
M	51	1	MONTGOMERY
M	72	1	MONTGOMERY
M	28	1	MONTGOMERY
M	49	1	PRINCE GEORGE'S
F	17	1	PRINCE GEORGE'S
M	28	1	PRINCE GEORGE'S
F	61	1	BALTIMORE CITY
M	22	1	BALTIMORE CITY
M	48	1	BALTIMORE CITY
M	57	1	BALTIMORE CITY
F	87	1	BALTIMORE CITY
M	10	1	BALTIMORE CITY
F	44	1	BALTIMORE CITY
M	67	1	OUT OF STATE
F	72	1	OUT OF STATE
F	34	1	OUT OF STATE
M	84	1	OUT OF STATE
F	26	1	OUT OF STATE
M	22	1	OUT OF STATE
F	81	1	OUT OF STATE
MYCOBACTERIUM XENOPI			
F	45	1	BALTIMORE CITY
M	66	1	BALTIMORE CITY
RAPIDLY GROWING MYCOBACTERIA			
M	58	1	PRINCE GEORGE'S
TOTAL		**87**	

MYCOBACTERIUM SUSCEPTIBILITY RESULTS

DURING FEBRUARY, 2008, SUSCEPTIBILITY RESULTS ON 27 ISOLATES OF *M. TUBERCULOSIS* COMPLEX * WERE IDENTIFIED.

TOTAL: 8 DRUG RESISTANT STRAINS FOUND

2[A]	HOWARD	® to ISONIAZID
1[B]	MONTGOMERY	® to STREPTOMYCIN, ISONIAZID, RIFAMPIN, RIFABUTIN, PYRAZINAMIDE, and ETHAMBUTOL
2[A]	PRINCE GEORGE'S	® to ISONIAZID
1	PRINCE GEORGE'S	® to ISONIAZID and STREPTOMYCIN
1[B]	PRINCE GEORGE'S	® to STREPTOMYCIN, ISONIAZID, RIFAMPIN, RIFABUTIN, and ETHAMBUTOL
1	OUT OF STATE	® to STREPTOMYCIN

[A] Two isolates from the same patient
[B] Meets the case definition of Multi-Drug Resistant Tuberculosis (MDRTB)
® RESISTANT

**Mycobacterium tuberculosis* complex consists of:
M. tuberculosis
M. bovis
M. bovis, BCG
M. africanum
M. microti
M. canettii

MYCOLOGY

GENUS SPECIES			
SEX	AGE	#	JURISDICTION
ACREMONIUM SPECIES			
U	0	1	WASHINGTON
ALTERNARIA			
M	7	1	ALLEGANY
M	4	1	CALVERT
F	51	1	PRINCE GEORGE'S
F	30	1	TALBOT
M	16	1	BALTIMORE CITY
ASPERGILLUS FUMIGATUS			
F	0	1	ALLEGANY
F	70	1	ALLEGANY
F	83	1	ALLEGANY
M	73	1	ANNE ARUNDEL
F	54	1	ANNE ARUNDEL
M	67	1	ANNE ARUNDEL
M	72	1	ANNE ARUNDEL
M	80	1	CALVERT
F	80	1	MONTGOMERY
M	46	1	PRINCE GEORGE'S
M	45	1	BALTIMORE CITY
ASPERGILLUS NIGER			
F	0	1	ANNE ARUNDEL
F	61	1	TALBOT
M	65	1	BALTIMORE CITY
ASPERGILLUS SPECIES			
F	60	1	ALLEGANY
ASPERGILLUS USTUS			
M	85	1	BALTIMORE
F	19	1	BALTIMORE
CANDIDA ALBICANS			
F	53	1	CALVERT
F	61	1	FREDERICK
M	69	1	FREDERICK
M	74	1	HARFORD
M	74	1	MONTGOMERY
F	18	1	MONTGOMERY
F	25	1	MONTGOMERY
F	38	1	MONTGOMERY
F	68	1	MONTGOMERY
F	76	1	MONTGOMERY
F	82	1	MONTGOMERY
M	24	1	MONTGOMERY
M	47	1	MONTGOMERY
M	71	1	MONTGOMERY
M	74	1	MONTGOMERY
M	82	1	MONTGOMERY
F	40	1	MONTGOMERY
F	40	1	PRINCE GEORGE'S
F	85	1	PRINCE GEORGE'S
M	24	1	PRINCE GEORGE'S
M	46	1	PRINCE GEORGE'S
M	59	1	PRINCE GEORGE'S
M	68	1	PRINCE GEORGE'S
F	79	1	PRINCE GEORGE'S
F	19	1	PRINCE GEORGE'S
F	24	1	PRINCE GEORGE'S
F	18	1	PRINCE GEORGE'S
F	19	1	PRINCE GEORGE'S
F	20	1	PRINCE GEORGE'S
F	0	1	SOMERSET
F	18	1	SOMERSET
F	20	1	SOMERSET
F	21	1	SOMERSET
F	22	1	SOMERSET
F	33	1	BALTIMORE CITY
F	39	1	BALTIMORE CITY
F	48	1	BALTIMORE CITY
M	35	1	BALTIMORE CITY
M	41	1	BALTIMORE CITY
M	53	1	BALTIMORE CITY
M	60	1	BALTIMORE CITY
M	64	1	BALTIMORE CITY
M	66	1	BALTIMORE CITY
M	76	1	BALTIMORE CITY
M	78	1	BALTIMORE CITY
CANDIDA GLABRATA			
F	25	1	MONTGOMERY
M	80	1	PRINCE GEORGE'S
F	61	1	PRINCE GEORGE'S

F	69	1	PRINCE GEORGE'S
F	79	1	PRINCE GEORGE'S
M	0	1	PRINCE GEORGE'S
M	23	1	PRINCE GEORGE'S
M	45	1	PRINCE GEORGE'S
F	20	1	PRINCE GEORGE'S
F	39	1	BALTIMORE CITY
M	64	1	BALTIMORE CITY
M	76	1	BALTIMORE CITY
CANDIDA KRUSEI			
F	55	1	MONTGOMERY
CANDIDA LUSITANIAE			
F	79	1	BALTIMORE
CANDIDA PARAPSILOSIS			
F	64	1	CALVERT
F	48	1	MONTGOMERY
M	82	1	BALTIMORE CITY
CANDIDA TROPICALIS			
M	71	1	MONTGOMERY
M	79	1	MONTGOMERY
F	69	1	PRINCE GEORGE'S
M	64	1	BALTIMORE CITY
CLADOSPORIUM SPECIES			
M	60	1	ALLEGANY
EXOPHIALA			
M	54	1	BALTIMORE CITY
EXSEROHILUM			
M	0	1	WICOMICO
FUSARIUM SPECIES			
M	51	1	FREDERICK
M	52	1	TALBOT
HISTOPLASMA CAPSULATUM			
M	39	1	BALTIMORE
M	52	1	BALTIMORE CITY
HORMOGRAPHIELLA SPECIES			
U	0	1	WASHINGTON
MICROSPORUM CANIS			
U	6	1	ALLEGANY
MOULD			
F	84	1	BALTIMORE
M	74	1	HARFORD
MUCOR SPECIES			
M	58	1	BALTIMORE CITY
OCHROCONIS GALLOPAVA			
F	0	1	ANNE ARUNDEL
PAECILOMYCES VARIOTII			
M	78	1	MONTGOMERY
PENICILLIUM SPECIES			
F	0	1	ANNE ARUNDEL
U	0	1	WASHINGTON
M	58	1	BALTIMORE CITY
SCEDOSPORIUM PROLIFICANS			
F	91	1	CHARLES
F	86	1	CHARLES
TRICHOPHYTON RUBRUM			
F	0	1	ANNE ARUNDEL
M	34	1	ANNE ARUNDEL
M	66	1	MONTGOMERY
M	77	1	BALTIMORE CITY
TRICHOPHYTON TONSURANS			
F	1	1	TALBOT
TOTAL		**113**	

WATER MICROBIOLOGY

	# TESTED	**# NON-COMPLIANT**
COMMUNITY	6	0
NON-COMMUNITY	266	73
TOTAL	**272**	**73**

PARASITOLOGY

GENUS SPECIES	#	JURISDICTION
PROTOZOA		
BLASTOCYSTIS HOMINIS	1	PRINCE GEORGE'S
CHILOMASTIX MESNILI	1	PRINCE GEORGE'S
ENDOLIMAX NANA	1	MONTGOMERY
ENTAMOEBA COLI	3	HOWARD
	1	MONTGOMERY
	2	PRINCE GEORGE'S
ENTAMOEBA HARTMANNI	1	PRINCE GEORGE'S
TOTAL	**10**	
HELMINTHS		
ENTEROBIUS VERMICULARIS	1	CARROLL
	2	ST. MARY'S
	1	WASHINGTON
TOTAL	**4**	

ARTHROPOD IDENTIFICATION

NONE

TICK IDENTIFICATION

NONE

FOOD SAFETY

FOOD AND SHELLFISH MICROBIOLOGY

	# OF SAMPLES	**NOTABLE PATHOGENS**
FOOD	51	0
		# STANDARDS EXCEEDED *
CRABMEAT	0	0
		# STANDARDS EXCEEDED **
SHELLFISH	0	0
SHELLFISH GROWING WATERS	159	
TOTAL	**210**	**0**

STANDARDS

* CRABMEAT-FRESH

ESCHERICHIA COLI = LESS THAN 36 MPN/100 GRAM
STANDARD PLATE COUNT = LESS THAN 100,000 PER GRAM

** SHELLFISH

FECAL COLIFORMS = LESS THAN 230 MPN/100 GRAM
STANDARD PLATE COUNT = LESS THAN 500,000 PER GRAM

VIRUS ISOLATION

ISOLATE	SEX	AGE	#	JURISDICTION
HERPES SIMPLEX VIRUS TYPE 1				
	F	21	1	WICOMICO
SUBTOTAL			**1**	
INFLUENZA A VIRUS				
	M	22	1	ALLEGANY
	F	0	1	BALTIMORE
	F	0	1	BALTIMORE
	M	11	1	CALVERT
	M	20	1	CALVERT
	F	31	1	CALVERT
	M	34	1	CALVERT
	F	11	1	CALVERT
	F	0	1	CALVERT
	F	11	1	CALVERT
	F	11	1	CALVERT
	M	16	1	CALVERT
	F	47	1	HARFORD
	M	24	1	HARFORD
	M	11	1	HARFORD
	M	1	1	HARFORD
	M	1	1	HARFORD
	M	3	1	HARFORD
	M	12	1	HARFORD
	M	24	1	PRINCE GEORGE'S
	F	24	1	PRINCE GEORGE'S
	M	0	1	PRINCE GEORGE'S
	M	0	1	SOMERSET
	M	0	1	WICOMICO
	M	22	1	WICOMICO
	F	24	1	WICOMICO
	M	87	1	BALTIMORE CITY
	M	86	1	BALTIMORE CITY
	F	1	1	BALTIMORE CITY
	F	1	1	BALTIMORE CITY
	F	1	1	BALTIMORE CITY
	F	1	1	BALTIMORE CITY
	M	1	1	BALTIMORE CITY
	M	31	1	BALTIMORE CITY
	F	2	1	BALTIMORE CITY
	M	19	1	BALTIMORE CITY
	M	19	1	BALTIMORE CITY
SUBTOTAL			**37**	
INFLUENZA B VIRUS				
	F	87	1	CALVERT
SUBTOTAL			**1**	
PARAINFLUENZA VIRUS 3				
	F	1	1	BALTIMORE CITY
SUBTOTAL			**1**	
RESPIRATORY SYNCYTIAL VIRUS				
	M	0	1	BALTIMORE CITY
SUBTOTAL			**1**	
TOTAL			**41**	

NOTE: HERPES SIMPLEX STATISTICS CANNOT BE REPORTED THIS MONTH BECAUSE WE ARE TRANSITIONING TO A NEW COMPUTER SYSTEM. WE HOPE TO HAVE HSV STATISTICS BACK BY NEXT MONTH.

VIRAL HEPATITIS

ORGANISM	# OF SPECIMENS	POSITIVES	JURISDICTION
HEPATITIS A			
	1	0	ALLEGANY
	2	0	ANNE ARUNDEL
	5	0	BALTIMORE
	3	0	BALTIMORE CITY
	4	0	CARROLL
	3	0	HARFORD
	1	0	MONTGOMERY
	2	0	PRINCE GEORGE'S
	2	0	WICOMICO
SUBTOTAL	**23**	**0**	
HEPATITIS B			
	53	0	ALLEGANY
	104	1	ANNE ARUNDEL
	59	0	BALTIMORE
	785	14	BALTIMORE CITY
	2	0	CALVERT
	39	1	CARROLL
	151	3	CECIL
	2	0	CHARLES
	96	0	FREDERICK
	16	0	GARRETT
	63	1	HARFORD
	33	0	HOWARD
	251	2	MONTGOMERY
	391	5	PRINCE GEORGE'S
	1	0	QUEEN ANNES
	1	0	SAINT MARYS
	5	0	SOMERSET
	13	0	TALBOT
	32	0	WASHINGTON
	118	1	WICOMICO
	2	0	WORCESTER
SUBTOTAL	**2,217**	**28**	
HEPATITIS C			
	1	1	
	47	3	ALLEGANY
	116	25	ANNE ARUNDEL
	58	4	BALTIMORE
	301	124	BALTIMORE CITY
	4	0	CALVERT
	36	7	CARROLL
	64	10	CECIL
	3	0	CHARLES
	1	0	DORCHESTER
	98	5	FREDERICK
	17	0	GARRETT
	29	4	HARFORD
	40	4	MONTGOMERY
	230	5	PRINCE GEORGE'S
	1	0	QUEEN ANNES
	2	0	SAINT MARYS
	15	0	TALBOT
	12	0	WASHINGTON
	22	1	WICOMICO
	2	0	WORCESTER
SUBTOTAL	**1,099**	**193**	
TOTALS	**3,339**	**221**	

RABIES

SOURCE	#	JURISDICTION
FOX	1	BALTIMORE
	1	CARROLL
	1	CHARLES
	1	FREDERICK
	1	MONTGOMERY
RACCOON	1	ALLEGANY
	1	BALTIMORE
	3	CARROLL
	2	FREDERICK
	3	HARFORD
	3	MONTGOMERY
	2	QUEEN ANNE'S
	1	SOMERSET
	2	TALBOT
SKUNK	1	CHARLES
	1	MONTGOMERY
	1	PRINCE GEORGE'S
TOTAL POSITIVES	**26**	
TOTAL SPECIMENS	**253**	

CHLAMYDOPHILIA (CHLAMYDIA) PSITTACI

REPORTED QUARTERLY
NO REPORT THIS MONTH

CD4 FLOW CYTOMETRY WORKLOAD

REPORTED QUARTERLY
NO REPORT THIS MONTH

The services and facilities of the Maryland Department of Health and Mental Hygiene (DHMH) are operated on a non-discriminatory basis. This policy prohibits discrimination on the basis of age; ancestry; color; creed; marital status; mental or physical disability; national origin; race; religious affiliation, belief, or opinion; sex; or sexual orientation and applies to the provisions of employment and granting of advantages, privileges and accommodations. The Department, in compliance with the Americans with Disabilities Act, ensures that qualified individuals with disabilities are given an opportunity to participate in and benefit from DHMH services, programs, benefits, and employment opportunities.

NEWBORN & CHILDHOOD SCREENING

STATISTICS FOR FEBRUARY 2008

PRESUMPTIVE POSITIVES

DISORDERS	#
PHENYLKETONURIA	2
MAPLE SYRUP URINE DISEASE	7
HOMOCYSTINURIA	23
TYROSINEMIA	17
ARGININEMIA	2
CITRULLINEMIA	2
GALACTOSEMIA	1
BIOTINIDASE DEFICIENCY	2
HYPOTHYROIDISM	56
HEMOGLOBIN -DISEASE	22
HEMOGLOBIN -BENIGN	431
CONGENITAL ADRENAL HYPERPLASIA (CAH)	36
CYSTIC FIBROSIS	2
FATTY ACID OXIDATIONS	7
ORGANIC ACIDEMIAS	25
ACYLCARNITINE - BORDERLINE	5
ACYLCARNITINE - OTHERS	15

MONTHLY TOTALS

# OF SPECIMENS SCREENED	10,185
NUMBER OF TESTS	901,034
% OF UNSATISFACTORY SPECIMENS	2.3

YEAR-TO-DATE CONFIRMED CASES

CONDITIONS	# CONFIRMED
MCAD	0
3MCC	0
SCAD	1
VLCAD	0
GA-I	0
MAPLE SYRUP URINE DISEASE	0
PKU- CLINICALLY SIGNIFICANT VARIANT	1
PKU- NOT CLINICALLY SIGNIFICANT VARIANT	1
GALACTOSEMIA- CLASSICAL GALT DEFICIENCY	0
GALACTOSEMIA - VARIANT	1
BIOTINIDASE DEFICIENCY	0
GALACTOSE EPIMERASE DEFICIENCY	0
PARTIAL BIOTINIDASE DEFICIENCY	0
CAH- CLASSICAL SALT WASTING	0
CAH-NON-CLASSICAL	0
HYPOTHYROIDISM - PRIMARY	4
OTHER HYPOTHYROIDISM	1
SICKLE CELL DISEASE -SS	0
SICKLE CELL DISEASE -SC	0
SICKLE CELL DISEASE -S BETA THALASSEMIA	0
CYSTIC FIBROSIS	1

ENVIRONMENTAL CHEMISTRY

SAMPLES	# NON-COMPLIANT	# TESTED
ASBESTOS		
AIR	0	0
BULK	3	5
AIR QUALITY		
$PM_{2.5}$	0	402
PM_{10}	0	0
RADIATION		
AIR/CHARCOAL FILTERS	0	56
MILK	0	4
WIPES	0	171
RAW WATER	0	10
VEGETATION	0	0
OTHER	0	0
DRINKING WATER		
METALS		
COMMUNITY	8	14
NON-COMMUNITY	0	3
PRIVATE WELLS	48	175
PESTICIDES & PCBs		
COMMUNITY	0	60
NON-COMMUNITY	0	12
PRIVATE WELLS	0	0
VOLATILE ORGANIC COMPOUNDS		
COMMUNITY	0	216
NON-COMMUNITY	0	42
PRIVATE WELLS	0	138
RADIATION		
COMMUNITY	11	40
NON-COMMUNITY	0	0
PRIVATE WELLS	1	9
INORGANICS		
COMMUNITY	1	23
NON-COMMUNITY	4	151
PRIVATE WELLS	17	290
FOOD CHEMISTRY		
SUSPECTED TAMPERING	0	0
MICROSCOPIC FILTH	0	1
LABELING	0	0
SURVEILLANCE	0	5
CHEMICAL CONTAMINATION	0	2
TOTAL	**93**	**1,829**

LEAD ENVIRONMENTAL

TEST	#	ELEV	BRL	UNSAT
TOTAL PAINT	**2**	**2**	**0**	**0**
TOTAL SOIL	**4**	**0**	**3**	**0**
DUST				
FLOOR	242	25	208	0
SILL	471	19	406	0
WELL	190	14	125	1
OTHER	5	1	4	0
TOTAL DUST	**908**	**59**	**743**	**1**
GRAND TOTAL	**914**	**61**	**746**	**1**

INTERPRETATION OF RESULTS:
# = Number of Samples Received
ELEV= Elevated
BRL= Below Reporting Limit
UNSAT = Unsatisfactory
PAINT Positive in excess of 0.5%
SOIL Action level 400 - 5,000 ppm
DUST Clearance limits: Floor/Other 40 ug/sq ft
Window Sill 250 ug/sq ft
Window Well 400 ug/sq ft

LEAD SCREENING - BLOOD LEAD

CLASS	RANGE ug/dl	# TESTED
MARYLAND		
I	<10	106
IIA	10-14	2
IIB	15-19	6
III	20-44	10
IV	45-69	1
V	>69	0
TOTAL		**125**
WASHINGTON DC		
I	<10	1
IIA	10-14	0
IIB	15-19	0
III	20-44	0
IV	45-69	0
V	>69	0
TOTAL		**1**

HIV ANTIBODY SCREENING – BLOOD (FEBRUARY 2008)

SPECIMEN SOURCES	TOTAL	POSITIVE EIA	%	POSITIVE WB	%
HEALTH DEPARTMENTS AND CLINICS	2,111	107	5.07%	95	88.78%
HOSPITALS	142	10	7.04%	8	80.00%
DETENTION CENTERS	573	7	1.22%	5	71.42%
PRIVATE PHYSICIANS	20	0	0.00%	0	0.00%
STUDENT HEALTH CLINICS	270	2	74.10%	0	0.00%
EMPLOYEE HEALTH CLINICS	19	2	10.53%	0	0.00%
AUTOPSIES	310	6	1.93%	4	66.66%
ORGAN/TISSUE DONORS	96	1	1.04%	1	100.00%
TOTAL	**3,541**	**135**	**3.81%**	**113**	**83.70%**

VIRAL LOAD SPECIMENS (FEBRUARY 2008)

HIV–1 RNA Copies/ml	$<10^3$	$10^3 – 10^4$	$10^4 – 10^5$	$>10^5$	Totals
ALLEGANY COUNTY HEALTH DEPARTMENT	6	0	1	1	**8**
FREDERICK COUNTY HEALTH DEPARTMENT	0	1	0	0	**1**
MONTGOMERY COUNTY HEALTH DEPARTMENT	76	10	10	5	**101**
PRINCE GEORGES COUNTY HEALTH DEPARTMENT	60	5	12	5	**82**
WASHINGTON COUNTY HEALTH DEPARTMENT	1	1	3	0	**5**
WICOMICO COUNTY HEALTH DEPARTMENT	4	1	1	0	**6**
SUBTOTALS	**147**	**18**	**27**	**11**	**203**
DEPT. OF CORRECTIONS	47	13	23	16	**99**
TOTALS	**194**	**31**	**50**	**27**	**302**

MAILING LABEL

Maryland Department of Health & Mental Hygiene
J. Mehsen Joseph Public Health Laboratory
Critical Link c/o Georgia Corso L-15
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Baltimore Maryland 21201