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# CRITICAL LINK

March 2007 Volume 11, Number 3


# Food Chemistry Safety Laboratory: New Capabilities

Physical manipulation of a food's environment can inhibit, kill, or support greater growth of spoilage and pathogenic microorganisms. Environmental factors that can play a role in the food environment and food safety that need to be measured include moisture, water activity, salt content, and radiation. Possible tampering and terrorist events that may involve food contamination also require that the Laboratories Administration's Food Chemistry Safety Laboratory (FCSL) is able to detect radiation, cyanide, and a number of toxic metals and organic compounds.

Over the past three years, the FCSL has expanded its food-testing capabilities by purchasing several new analytical instruments and by validating a number of new test methods. Without proper instrumentation, food chemistry testing can be extremely complex and tedious (labor intensive) since it involves a wide variety of food matrices and differing methods, depending on the analyte of interest. In addition to routine surveillance testing, the FCSL is now involved in developing new forensic methods to analyze food samples associated with cases of tampering and contamination following acts of terrorism or accidental exposure to chemicals.

State-of-the-art instruments were procured for the FCSL using funds available from federal grants provided by the CDC and FDA. Having proper analytical instruments and the expertise to develop and implement rapid methods are definite assets in building a FCSL that can meet national standards and effectively support the State's food safety program.

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## Expanded Testing

Water is the major factor in the food environment. It is the availability of water rather than the amount that determines microbial inhibition or spoilage. Water bound by hydrogen bonding to chemical constituents of the food is not available for chemical reactions or microbial growth. The more unbound water that is available, the more microbes can grow. The measure of water activity ($a_w$) is the ratio of the vapor pressure of water in a food, P, to the vapor pressure of pure (distilled) water ($P_0$) under identical conditions ($a_w = P/P_0$).

Water vapor moving from a food to the air depends on moisture content, composition of the food, temperature and humidity. At constant temperature and humidity water in a food equilibrates with water vapor in the air. This is the food's equilibrium moisture content. Foods at the same $a_w$ often have different moisture contents due to their chemical compositions and different water binding capacities. For example, fresh fruits and meat have a much higher $a_w$ ($\geq$0.98) than do rice and beans (0.80-0.87), dried fruits (0.60-0.65) and dehydrated vermicelli or powdered milk (0.20-0.60).[1] Foods can be made safer by reducing their $a_w$ through such processes as dehydration, evaporation and freeze-drying.

The relationship between $a_w$, microbial inhibition, and shelf life is that the lower the $a_w$, the more types of microbes are inhibited and the longer the shelf life. For example, most spore formers won't grow below an $a_w$ of 0.93.[1] *Clostridium botulinum* and Salmonella won't grow below an $a_w$ of 0.90, aerobic *Staphylococcus aureus* below 0.86 (or toxin production below 0.93), most yeasts below 0.88, ochratoxin production below 0.87, aflatoxin production below 0.82, regular molds below 0.80, and osmophilic yeasts and molds below 0.60.[1]

Knowing the $a_w$ of a food helps determine what processing it should undergo to maximize shelf life, if it is of expected

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quality, and if it may be susceptible to particular pathogens and spoilage microorganisms.

**The $a_w$** determination of processed foods is another integral part of determining food quality. The FCSL has a newly purchased and validated water activity meter. It was recently used to measure $a_w$ in home-canned products sold at a local farmer's market. The expected (safe) $a_w$ value for most canned foods is 0.85.

**Moisture content** of a food is determined by measuring the mass of the material before and after the water is removed by evaporation. Moisture content, expressed as a percent, is a critical factor of quality in all snack foods and baking products, and is an integral part of food-quality testing. Last year the FCSL purchased a Moisture Analyzer that uses a thermogravimetric technique for measuring moisture in food. This method was validated by testing food products in-house and comparing results to "The USDA National Nutrient Database for Standard Reference" that lists moisture contents for a number of foods. Comparing moisture content values of foods to values in the USDA database provides a mechanism for monitoring food quality.

**Salt content** determination of foods is another important food-quality test because of the effects salt has on flavor, processing and aspects of diet. In addition, several salt-tolerant yeast species (e.g., *Debaryomyces ansenii*, *Hansenula amomala*, and *Candida pseudotropicalis*) grow well on cured meats and pickles at sodium chloride concentrations of up to 11% ($a_w$ = 0.93).[2]

**Microscopy** is another important food safety tool. The FCSL is equipped with a stereomicroscope and attached digital camera that can take photographs of food samples being analyzed for foreign objects or filth. Photographs are routinely taken of samples under microscopic and macroscopic conditions, as well as of sample packaging to document condition of the product upon receipt by the laboratory.

**Percent fat** is determined by extracting fat from foods using a SOXTHERM™ extraction system. Percent fat is determined by weighing a sample, then digesting or hydrolyzing it, followed by solvent extraction of the fat. The remaining sample is evaporated to dryness and the residue is weighed. The percent fat is then calculated using the initial and final weights of the sample. This test is used to evaluate a food manufacturer's compliance with labeling laws.

**Food additives** also can be analyzed using a new high performance liquid chromatograph (HPLC) that is capable of using several food chemistry methods based on the instrument's three detectors (UV/VIS, refractive index, and fluorescence.) The FCSL has used this new HPLC to develop and validate methods to analyze additives (aspartame, benzoic acid, and caffeine) and organic acids (ascorbic, acetic, butyric, citric, formic, fumaric, lactic, malic, malonic, oxalic, pyruvic, succinic, and tartaric) in beverages. The nature and concentration of organic acids in fruit have been of interest because of their important influence on the organoleptic properties of fruit juices. The presence and concentration of organic acids determine tartness and other flavor attributes. Organic acids may be naturally present in fruit. They also may originate from biochemical processes, from activity of some microorganisms, or from addition as acidulants, stabilizers, or preservatives to fruit juices. It is necessary to determine organic acids in some cases to assess whether an expensive juice has been illegally adulterated with a lower quality juice. Because organic acid profiles are distinct to each type of fruit juice, evidence of adulteration can be evaluated by comparing the known juice fingerprint to that of the suspected adulterated juice. These profiles can also determine juice freshness or spoilage.

The tartness of pure fruit juices is largely due to a group of organic acids. The particular acids present, and their relative abundances, can be diagnostic features of the juices (e.g., the acidity of apple juice is largely due to malic acid). Dilution of apple juice with added sugar will result in decline in the malic acid content. Similarly, tartness of orange juice is largely due to citric acid. Presence of lactic acid which is a product of microbial activity can be a useful indicator of the state of preservation of certain food products.

**Cyanide screening** is used to analyze cyanide in bottled water, selected food products, and beverages. The protocol initially requires the qualitative testing of the sample using Cyantesmo test paper followed by the Spectrophotometric Method for the Quantification of Cyanide for samples testing positive using the test paper. Recently, the laboratory participated in a surveillance exercise sponsored by the Food Emergency Response Network (FERN) to test for cyanide in bottled water samples collected from a commercial airline at Baltimore/Washington International Thurgood Marshall Airport. These methods were validated prior to the receipt of the surveillance samples.

**Toxic metals and semi-volatile organic compounds screening** methods are being validated by the FCSL for the analysis of heavy metals and organic contaminants in food and food products. Staff members received training at the FDA Laboratory in Cincinnati, Ohio for the performance of two food analytical testing methods. The training was sponsored by FERN in an effort to increase emergency response capabilities of state public health laboratories in the event of a food safety emergency. Environmental Chemistry staff had an opportunity to learn techniques for the preparation and analysis of a number of food products using Inductively Coupled Plasma/Mass Spectrometry (ICP/MS) and Gas Chromatography/Mass Spectrometry (GC/MS).

**Radiation** testing capabilities for foods is being greatly strengthened through a recently awarded cooperative agreement from the FDA supporting a Food Safety and Monitoring Project for radiological health. This project will enable the laboratory to screen and identify gamma and beta emitters in various food products such as vegetables, fruits, juices, grains and grain products, seafood, and other fish products, milk and other dairy products, infant formula,

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# Critical Link

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baby foods, bottled water, condiments, and alcoholic beverages. As a part of the agreement, the FCSL will be validating additional methods and participating in surveillance and performance evaluation exercises for the enhancement of the federal food safety program.

If you have any questions regarding food chemistry testing of any food product, please contact the Food Chemistry Safety Laboratory of the Division of Environmental Chemistry at 410-767-5537 or 410-767-6199.

This article prepared by Delores Willis and Sadia Muneem.

[1] Doyle, M.P., L.R. Beuchat, and T.J. Montville. 2001. *Food Microbiology: Fundamentals and Frontiers*, ASM Press, Wash., DC, pp. 568-569.

[2] Montville, T.J. and K.R. Matthews. 2005. *Food Microbiology: An Introduction*, ASM Press, Wash. DC, p. 323.

# Laboratory Statistics

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

* 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** 12/01/06 - 12/31/06

## ENTERIC BACTERIOLOGY

| GENUS SEROVAR | SEX | AGE | # | JURISDICTION |
|---|---|---|---|---|
| **CAMPYLOBACTER** JEJUNI | | | | |
| | M | 1 | 1 | CARROLL |
| **ESCHERICHIA** COLI O157:H7 | | | | |
| | F | 4 | 1 | BALTIMORE |
| | M | 32 | 1 | FREDERICK |
| | M | | 1 | BALTIMORE CITY |
| **SALMONELLA** BAREILLY | | | | |
| | M | 27 | 1 | CHARLES |
| **SALMONELLA** ENTERITIDIS | | | | |
| | M | 27 | 1 | WASHINGTON |
| | F | | 1 | BALTIMORE CITY |
| | F | 1 | 1 | BALTIMORE CITY |
| | F | 4 | 1 | BALTIMORE CITY |
| | F | 9 | 1 | BALTIMORE CITY |
| | F | 46 | 1 | BALTIMORE CITY |
| | M | 2 | 1 | BALTIMORE CITY |
| | M | 61 | 1 | BALTIMORE CITY |
| | F | 59 | 1 | OUT OF STATE |
| | F | 62 | 1 | OUT OF STATE |
| **SALMONELLA** HEIDELBERG | | | | |
| | M | 7 | 1 | OUT OF STATE |
| **SALMONELLA** JAVIANA | | | | |
| | F | 48 | 1 | MONTGOMERY |
| **SALMONELLA** MUENCHEN | | | | |
| | F | 5 | 1 | ANNE ARUNDEL |
| **SALMONELLA** NEWPORT | | | | |
| | F | 19 | 1 | WICOMICO |
| | F | 41 | 1 | WICOMICO |
| **SALMONELLA** SAINTPAUL | | | | |
| | M | 1 | 2 | PRINCE GEORGE'S |
| **SALMONELLA** TYPHIMURIUM | | | | |
| | F | | 1 | BALTIMORE |
| **SALMONELLA** TYPHIMURIUM VAR COPENHAGEN | | | | |
| | M | 9 | 1 | TALBOT |
| | F | 5 | 1 | BALTIMORE CITY |
| | M | | 1 | OUT OF STATE |
| **SHIGELLA** FLEXNERI III:(3,4),6,7,8 | | | | |
| | U | | 1 | BALTIMORE |
| | M | 48 | 1 | PRINCE GEORGE'S |
| **SHIGELLA** FLEXNERI | | | | |
| | F | | 1 | BALTIMORE |
| **SHIGELLA** FLEXNERI I:4,6 | | | | |
| | M | 46 | 1 | ANNE ARUNDEL |
| **SHIGELLA** FLEXNERI II:3,4 | | | | |
| | F | | 1 | BALTIMORE |
| **SHIGELLA** SONNEI | | | | |
| | F | 2 | 1 | OUT OF STATE |
| | F | 54 | 1 | OUT OF STATE |
| **TOTAL** | | | **33** | |

## ISOLATES – THROAT CULTURES

| COUNTY | GROUP A[1] | NON-GROUP A |
|---|---|---|
| ALLEGANY | 2 | 7 |
| ANNE ARUNDEL | 1 | 1 |
| BALTIMORE CITY | 2 | 4 |
| MONTGOMERY | 0 | 4 |
| PRINCE GEORGE'S | 0 | 1 |
| SOMERSET | 0 | 1 |
| WICOMICO | 0 | 8 |
| **TOTAL** | **5** | **26** |

[1] *Streptococcus pyogenes*

## BACTERIOLOGY IDENTIFICATIONS
### Referrals

| GENUS SPECIES / SOURCE | # | JURISDICTION |
|---|---|---|
| **ALCALIGENES** FAECALIS | | |
| URINE | 1 | ALLEGANY |
| **BORDETELLA** BRONCHISEPTICA | | |
| BRONCHIAL | 1 | ANNE ARUNDEL |
| **HAEMOPHILUS** INFLUENZAE NON-TYPEABLE | | |
| BLOOD | 2 | ALLEGANY |
| BLOOD | 1 | BALTIMORE |
| CSF | 1 | BALTIMORE |
| BLOOD | 3 | BALTIMORE CITY |
| BLOOD | 1 | FREDERICK |
| BLOOD | 2 | PRINCE GEORGE'S |
| **HAEMOPHILUS** INFLUENZAE SEROTYPE F | | |
| BLOOD | 1 | BALTIMORE CITY |
| BLOOD | 1 | TALBOT |
| **METHYLOBACTERIUM** MESOPHILICUM | | |
| BLOOD | 1 | BALTIMORE CITY |
| **PROPIONIBACTERIUM** ACNES | | |
| BLOOD | 1 | WICOMICO |
| **ROSEOMONAS** GILARDII | | |
| BLOOD | 1 | BALTIMORE CITY |
| **STAPHYLOCOCCUS** AUREUS | | |
| SPUTUM | 1 | WICOMICO |
| **STREPTOCOCCUS** PNEUMONIAE | | |
| NASAL | 1 | BALTIMORE |
| **TOTAL** | **19** | |

## ISOLATES – MISCELLANEOUS

| GENUS SPECIES / SOURCE | # | JURISDICTION |
|---|---|---|
| **ACINETOBACTER** CALCOACETICUS-BAUMANNII COMPLEX | | |
| WOUND | 1 | BALTIMORE |
| FOOT | 1 | FREDERICK |
| SPUTUM | 1 | HOWARD |
| **ACINETOBACTER** JEIKEIUM | | |
| BLOOD | 1 | BALTIMORE CITY |
| **ACINETOBACTER** LWOFFII | | |
| KNEE | 1 | ALLEGANY |
| TOE | 1 | FREDERICK |
| AEROBIC GRAM NEGATIVE RODS | | |
| BLOOD | 22 | BALTIMORE CITY |
| **BACILLUS** SPECIES | | |
| BLOOD | 1 | BALTIMORE CITY |
| CSF | 1 | BALTIMORE CITY |
| FOOT | 1 | MONTGOMERY |
| **CITROBACTER** FREUNDII COMPLEX | | |
| FOOT | 1 | FREDERICK |
| **CORYNEBACTERIUM** SPECIES | | |
| BLOOD | 1 | BALTIMORE CITY |
| FOOT | 1 | FREDERICK |
| WOUND | 1 | PRINCE GEORGE'S |
| LESION | 1 | SOMERSET |
| **ENTEROBACTER** CLOACAE | | |
| FOOT | 2 | FREDERICK |
| **ENTEROCOCCUS** FAECALIS | | |
| BLOOD | 1 | BALTIMORE CITY |
| FOOT | 1 | FREDERICK |
| TOE | 1 | FREDERICK |
| **ENTEROCOCCUS** FAECIUM | | |
| BLOOD | 2 | BALTIMORE CITY |
| **ESCHERICHIA** COLI | | |
| SPUTUM | 1 | FREDERICK |
| WOUND | 1 | FREDERICK |
| **GARDNERELLA** VAGINALIS | | |
| VAGINAL | 1 | CECIL |
| VAGINAL | 1 | MONTGOMERY |
| VAGINAL | 12 | SOMERSET |
| **PANTOEA** AGGLOMERANS | | |
| TOE | 1 | FREDERICK |
| **PROTEUS** MIRABILIS | | |
| BLOOD | 1 | BALTIMORE CITY |
| TOE | 1 | FREDERICK |
| **PSEUDOMONAS** AERUGINOSA | | |
| TOE | 1 | FREDERICK |
| **PSEUDOMONAS** FLUORESCENS | | |
| SPUTUM | 1 | HOWARD |
| **RHIZOBIUM** RADIOBACTER | | |
| TOE | 1 | FREDERICK |
| SPUTUM | 1 | HOWARD |
| **SERRATIA** MARCESCENS | | |
| FOOT | 1 | FREDERICK |
| **STAPHYLOCOCCUS** AUREUS | | |
| KNEE | 1 | ALLEGANY |
| WOUND | 2 | BALTIMORE |
| BLOOD | 3 | BALTIMORE CITY |
| ABSCESS | 1 | BALTIMORE CITY |
| CSF | 2 | BALTIMORE CITY |
| EYE | 2 | CARROLL |
| CATHETER SITE | 1 | CARROLL |
| WOUND | 1 | CARROLL |
| PENIS | 1 | CECIL |
| STOOL | 1 | CECIL |
| FOOT | 1 | FREDERICK |
| SPUTUM | 3 | FREDERICK |
| TOE | 8 | FREDERICK |
| ABSCESS | 1 | MONTGOMERY |
| WOUND | 1 | PRINCE GEORGE'S |
| LESION | 1 | SOMERSET |
| VAGINAL | 3 | SOMERSET |
| WOUND | 1 | WASHINGTON |
| **STAPHYLOCOCCUS** EPIDERMIDIS | | |
| BLOOD | 1 | BALTIMORE CITY |
| **STAPHYLOCOCCUS** SIMULANS | | |
| BLOOD | 1 | BALTIMORE CITY |
| **STAPHYLOCOCCUS** SPECIES | | |
| WOUND | 1 | BALTIMORE |
| BLOOD | 7 | BALTIMORE CITY |
| CSF | 1 | BALTIMORE CITY |
| LESION | 1 | CECIL |
| FOOT | 1 | FREDERICK |
| TOE | 3 | FREDERICK |
| WOUND | 1 | PRINCE GEORGE'S |
| **STREPTOCOCCUS** ALPHA-HEMOLYTIC | | |
| BLOOD | 11 | BALTIMORE CITY |
| **STREPTOCOCCUS** BETA-HEMOLYTIC GROUP B | | |
| VAGINAL | 2 | ANNE ARUNDEL |
| BLOOD | 2 | BALTIMORE CITY |

| | | |
|---|---|---|
| VAGINAL | 1 | HOWARD |
| VAGINAL | 1 | MONTGOMERY |
| VAGINAL | 7 | PRINCE GEORGE'S |
| VAGINAL | 6 | SOMERSET |
| **STREPTOCOCCUS** BETA-HEMOLYTIC GROUP G | | |
| TOE | 1 | FREDERICK |
| **STREPTOCOCCUS** BETA-HEMOLYTIC NON-GROUPABLE | | |
| BLOOD | 1 | BALTIMORE CITY |
| VAGINAL | 1 | SOMERSET |
| **STREPTOCOCCUS** INTERMEDIUS | | |
| BLOOD | 1 | BALTIMORE CITY |
| **STREPTOCOCCUS** NON-HEMOLYTIC | | |
| BLOOD | 11 | BALTIMORE CITY |
| **STREPTOCOCCUS** SANGUINUS | | |
| BLOOD | 1 | BALTIMORE CITY |
| **TOTAL** | **164** | |

## SEXUALLY TRANSMITTED DISEASES

**GENUS** SPECIES

| SEX | # | JURISDICTION |
|---|---|---|
| **NEISSERIA** GONORRHEAE | | |
| F | 4 | ANNE ARUNDEL |
| F | 2 | BALTIMORE |
| M | 3 | BALTIMORE |
| F | 1 | CALVERT |
| F | 1 | CAROLINE |
| M | 0 | CAROLINE |
| F | 1 | CARROLL |
| M | 2 | CARROLL |
| F | 1 | CHARLES |
| M | 2 | CHARLES |
| F | 0 | DORCHESTER |
| M | 2 | DORCHESTER |
| F | 2 | FREDERICK |
| F | 1 | HARFORD |
| M | 1 | HARFORD |
| F | 1 | KENT |
| F | 3 | MONTGOMERY |
| M | 2 | MONTGOMERY |
| F | 6 | PRINCE GEORGE'S |
| M | 31 | PRINCE GEORGE'S |
| F | 1 | ST. MARY'S |
| M | 1 | ST. MARY'S |
| F | 3 | SOMERSET |
| M | 0 | SOMERSET |
| F | 1 | WASHINGTON CO |
| F | 4 | WICOMICO |
| M | 5 | WICOMICO |
| F | 2 | WORCESTER |
| M | 0 | WORCESTER |
| F | 1 | BALTIMORE CITY |
| M | 3 | BALTIMORE CITY |
| U | 1 | BALTIMORE CITY |
| **TOTAL** | **88** | |
| SYPHILIS SEROLOGY | | |
| F | 2 | ALLEGANY |
| M | 1 | ALLEGANY |
| F | 6 | ANNE ARUNDEL |
| M | 11 | ANNE ARUNDEL |
| F | 7 | BALTIMORE |
| M | 13 | BALTIMORE |
| F | 1 | CARROLL |
| M | 2 | CARROLL |
| F | 2 | CECIL |
| F | 1 | CHARLES |
| M | 2 | CHARLES |
| F | 1 | FREDERICK |
| F | 2 | HARFORD |
| M | 2 | HARFORD |
| F | 2 | HOWARD |
| M | 2 | HOWARD |
| M | 1 | KENT |
| F | 6 | MONTGOMERY |
| M | 5 | MONTGOMERY |
| F | 20 | PRINCE GEORGE'S |
| M | 18 | PRINCE GEORGE'S |
| F | 1 | ST. MARY'S |
| M | 3 | ST. MARY'S |
| M | 1 | SOMERSET |
| M | 3 | TALBOT |
| F | 3 | WASHINGTON |
| M | 2 | WASHINGTON |
| F | 1 | WICOMICO |
| F | 13 | BALTIMORE CITY |
| M | 35 | BALTIMORE CITY |
| F | 1 | OUT OF STATE |
| M | 4 | OUT OF STATE |
| **TOTAL** | **174** | |
| **CHLAMYDIA** TRACHOMATIS | | |
| F | 5 | ALLEGANY |
| M | 4 | ALLEGANY |
| F | 17 | ANNE ARUNDEL |
| M | 12 | ANNE ARUNDEL |
| F | 27 | BALTIMORE |
| M | 12 | BALTIMORE |
| F | 7 | CALVERT |
| M | 2 | CALVERT |
| F | 3 | CAROLINE |
| M | 1 | CAROLINE |
| F | 4 | CARROLL |
| M | 1 | CARROLL |
| F | 9 | CHARLES |
| M | 8 | CHARLES |
| F | 1 | DORCHESTER |
| M | 1 | DORCHESTER |
| F | 6 | FREDERICK |
| M | 3 | FREDERICK |
| F | 1 | GARRETT |
| F | 13 | HARFORD |
| M | 3 | HARFORD |
| F | 3 | HOWARD |
| M | 2 | HOWARD |
| F | 2 | KENT |
| M | 2 | KENT |
| F | 21 | MONTGOMERY |
| M | 14 | MONTGOMERY |
| U | 1 | MONTGOMERY |
| F | 62 | PRINCE GEORGE'S |
| M | 24 | PRINCE GEORGE'S |
| M | 1 | QUEEN ANNE'S |
| F | 4 | ST. MARY'S |
| M | 2 | ST. MARY'S |
| F | 2 | SOMERSET |
| F | 1 | TALBOT |
| F | 3 | WASHINGTON |
| M | 4 | WASHINGTON |
| F | 24 | WICOMICO |
| M | 13 | WICOMICO |
| F | 4 | WORCESTER |
| F | 7 | BALTIMORE CITY |
| M | 14 | BALTIMORE CITY |
| U | 1 | BALTIMORE CITY |
| M | 2 | OUT OF STATE |
| **TOTAL** | **353** | |

## MYCOBACTERIOLOGY

| GENUS SPECIES | SEX | AGE | # | JURISDICTION |
|---|---|---|---|---|
| **MYCOBACTERIUM** TUBERCULOSIS | | | | |
| | M | | 1 | BALTIMORE CITY |
| | M | 85 | 1 | BALTIMORE CITY |
| **MYCOBACTERIUM** TUBERCULOSIS COMPLEX | | | | |
| | F | 21 | 1 | ANNE ARUNDEL |
| | F | 34 | 1 | BALTIMORE |
| | F | 35 | 1 | BALTIMORE |
| | M | 35 | 1 | BALTIMORE |
| | F | 28 | 1 | CAROLINE |
| | M | 29 | 1 | CARROLL |
| | M | 49 | 1 | CECIL |
| | F | 25 | 1 | MONTGOMERY |
| | M | 40 | 1 | MONTGOMERY |
| | M | 63 | 1 | MONTGOMERY |
| | F | 22 | 1 | PRINCE GEORGE'S |
| | F | 27 | 1 | PRINCE GEORGE'S |
| | F | 29 | 1 | PRINCE GEORGE'S |
| | F | 50 | 1 | PRINCE GEORGE'S |
| | M | 20 | 1 | PRINCE GEORGE'S |
| | M | 28 | 2 | PRINCE GEORGE'S |
| | M | 43 | 1 | WASHINGTON |
| | F | 87 | 1 | WICOMICO |
| | F | 47 | 1 | BALTIMORE CITY |
| | M | 41 | 1 | BALTIMORE CITY |
| | M | 78 | 1 | BALTIMORE CITY |
| | U | | 1 | BALTIMORE CITY |
| | F | | 1 | OUT OF STATE |
| | M | 42 | 1 | OUT OF STATE |
| | M | 54 | 2 | OUT OF STATE |
| | M | 58 | 1 | OUT OF STATE |
| | M | 59 | 1 | OUT OF STATE |
| | U | | 1 | OUT OF STATE |
| | U | 57 | 1 | OUT OF STATE |
| | M | 36 | 1 | OUT OF COUNTRY |
| **MYCOBACTERIUM** AVIUM COMPLEX | | | | |
| | F | | 1 | ANNE ARUNDEL |
| | F | 43 | 2 | ANNE ARUNDEL |
| | M | 73 | 1 | ANNE ARUNDEL |
| | F | 66 | 1 | BALTIMORE |
| | F | 81 | 1 | BALTIMORE |
| | F | 83 | 1 | BALTIMORE |
| | M | 64 | 1 | CARROLL |
| | F | 28 | 1 | FREDERICK |
| | F | 71 | 1 | FREDERICK |
| | M | 68 | 1 | FREDERICK |
| | F | 70 | 1 | HARFORD |
| | F | 44 | 1 | MONTGOMERY |
| | M | 49 | 1 | MONTGOMERY |
| | M | 59 | 1 | MONTGOMERY |
| | M | 65 | 1 | MONTGOMERY |
| | F | 59 | 1 | PRINCE GEORGE'S |
| | M | 66 | 1 | PRINCE GEORGE'S |
| | M | 46 | 1 | TALBOT |
| | F | 33 | 1 | BALTIMORE CITY |
| | F | 38 | 1 | BALTIMORE CITY |
| | F | 85 | 1 | BALTIMORE CITY |
| | M | 39 | 1 | BALTIMORE CITY |
| | M | 41 | 1 | BALTIMORE CITY |
| | M | 47 | 1 | BALTIMORE CITY |
| | M | 35 | 1 | OUT OF STATE |
| | M | 44 | 1 | OUT OF STATE |
| **MYCOBACTERIUM** CHELONAE | | | | |
| | M | 91 | 1 | FREDERICK |
| **MYCOBACTERIUM** FORTUITUM | | | | |
| | M | 22 | 1 | OUT OF STATE |
| **MYCOBACTERIUM** FORTUITUM COMPLEX | | | | |
| | U | 60 | 1 | HARFORD |
| **MYCOBACTERIUM** GORDONAE | | | | |
| | F | 45 | 1 | BALTIMORE |
| | F | 63 | 1 | BALTIMORE |
| | M | 76 | 1 | FREDERICK |
| | F | 31 | 1 | MONTGOMERY |
| | M | 38 | 1 | MONTGOMERY |
| | M | 76 | 1 | MONTGOMERY |
| | M | 56 | 1 | PRINCE GEORGE'S |
| | M | 74 | 1 | PRINCE GEORGE'S |
| | M | 65 | 1 | WORCESTER |
| | M | 57 | 1 | BALTIMORE CITY |
| **MYCOBACTERIUM** KANSASII | | | | |
| | F | 31 | 1 | MONTGOMERY |
| | M | 62 | 1 | BALTIMORE CITY |
| **MYCOBACTERIUM** MARINUM | | | | |
| | M | 64 | 1 | ANNE ARUNDEL |
| | M | 65 | 1 | ANNE ARUNDEL |
| **TOTAL** | | | **78** | |

## MYCOBACTERIUM SUSCEPTIBILITY RESULTS

DURING THE MONTH OF DECEMBER, 2006, WE REPORTED SUSCEPTIBILITY RESULTS ON 27 ISOLATES OF *M. TUBERCULOSIS* COMPLEX .*

5 DRUG RESISTANT STRAINS WERE IDENTIFIED:

| | | |
|---|---|---|
| 1 | ® to STREPTOMYCIN | CARROLL |
| 1 | ® to STREPTOMYCIN | MONTGOMERY |
| 1 | ® to STREPTOMYCIN and ISONIAZID | MONTGOMERY |
| 1 | ® to STREPTOMYCIN | PRINCE GEORGE'S |
| 1 | ® to STREPTOMYCIN | BALTIMORE CITY |

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

® RESISTANT

## MYCOLOGY

| GENUS SPECIES | SEX | AGE | # | JURISDICTION |
|---|---|---|---|---|
| **ARTHRINIUM** SPECIES | | | | |
| | M | 80 | 1 | MONTGOMERY |
| **ALTERNARIA** SP | | | | |
| | M | 50 | 1 | BALTIMORE |
| **ASPERGILLUS** FLAVUS | | | | |
| | M | 68 | 1 | BALTIMORE CITY |
| **ASPERGILLUS** FUMIGATUS | | | | |
| | M | 44 | 1 | PRINCE GEORGE'S |
| | M | 68 | 1 | PRINCE GEORGE'S |
| | F | 78 | 1 | TALBOT |
| | M | 75 | 1 | TALBOT |
| | F | | 1 | WICOMICO |
| | M | 57 | 1 | BALTIMORE CITY |
| **ASPERGILLUS** NIGER | | | | |
| | M | 81 | 1 | TALBOT |
| **ASPERGILLUS** OCHRACEUS | | | | |
| | F | 71 | 1 | ALLEGANY |
| **ASPERGILLUS** TERREUS | | | | |
| | F | 57 | 1 | TALBOT |
| **ASPERGILLUS** USTUS | | | | |
| | F | 44 | 1 | ALLEGANY |

| | | | |
|---|---|---|---|
| **ASPERGILLUS** VERSICOLOR GROUP | | | |
| F | | 1 | ANNE ARUNDEL |
| M | 77 | 1 | ANNE ARUNDEL |
| U | | 2 | ANNE ARUNDEL |
| **BIPOLARIS** SP | | | |
| U | | 1 | ANNE ARUNDEL |
| **CANDIDA** ALBICANS | | | |
| F | 17 | 1 | ANNE ARUNDEL |
| F | 21 | 1 | ANNE ARUNDEL |
| F | 25 | 2 | ANNE ARUNDEL |
| F | 28 | 1 | ANNE ARUNDEL |
| F | 79 | 1 | ANNE ARUNDEL |
| M | 27 | 1 | ANNE ARUNDEL |
| M | 73 | 1 | ANNE ARUNDEL |
| F | 64 | 1 | FREDERICK |
| F | 23 | 1 | HOWARD |
| F | 24 | 1 | HOWARD |
| F | 30 | 1 | HOWARD |
| F | 32 | 1 | HOWARD |
| F | 30 | 1 | MONTGOMERY |
| F | 34 | 1 | MONTGOMERY |
| F | 41 | 1 | MONTGOMERY |
| F | 45 | 1 | MONTGOMERY |
| F | 48 | 1 | MONTGOMERY |
| M | 45 | 1 | MONTGOMERY |
| M | 55 | 1 | MONTGOMERY |
| U | 57 | 1 | MONTGOMERY |
| F | 16 | 1 | PRINCE GEORGE'S |
| F | 18 | 2 | PRINCE GEORGE'S |
| F | 19 | 2 | PRINCE GEORGE'S |
| F | 21 | 2 | PRINCE GEORGE'S |
| F | 24 | 1 | PRINCE GEORGE'S |
| F | 27 | 1 | PRINCE GEORGE'S |
| F | 31 | 1 | PRINCE GEORGE'S |
| F | 53 | 2 | PRINCE GEORGE'S |
| F | 58 | 1 | PRINCE GEORGE'S |
| F | 98 | 1 | PRINCE GEORGE'S |
| M | 47 | 1 | PRINCE GEORGE'S |
| M | 65 | 1 | PRINCE GEORGE'S |
| M | 68 | 1 | PRINCE GEORGE'S |
| M | 69 | 1 | PRINCE GEORGE'S |
| F | 17 | 1 | SOMERSET |
| F | 18 | 3 | SOMERSET |
| F | 19 | 4 | SOMERSET |
| F | 21 | 4 | SOMERSET |
| F | 22 | 1 | SOMERSET |
| F | | 1 | BALTIMORE CITY |
| F | 27 | 1 | BALTIMORE CITY |
| F | 55 | 1 | BALTIMORE CITY |
| M | 52 | 1 | BALTIMORE CITY |
| M | 57 | 1 | BALTIMORE CITY |
| M | 68 | 1 | BALTIMORE CITY |
| M | 69 | 1 | BALTIMORE CITY |
| M | 85 | 1 | BALTIMORE CITY |
| **CANDIDA** GLABRATA | | | |
| F | 20 | 1 | ANNE ARUNDEL |
| F | 58 | 1 | PRINCE GEORGE'S |
| F | 69 | 1 | PRINCE GEORGE'S |
| M | 31 | 1 | PRINCE GEORGE'S |
| M | 68 | 1 | PRINCE GEORGE'S |
| M | 73 | 1 | PRINCE GEORGE'S |
| M | 91 | 1 | PRINCE GEORGE'S |
| M | 46 | 1 | BALTIMORE CITY |
| M | 59 | 1 | BALTIMORE CITY |
| **CANDIDA** KRUSEI | | | |
| U | 57 | 1 | MONTGOMERY |
| **CANDIDA** PARAPSILOSIS | | | |
| M | 12 | 1 | CALVERT |
| M | 56 | 1 | FREDERICK |
| M | 91 | 1 | PRINCE GEORGE'S |
| **CANDIDA** TROPICALIS | | | |
| F | 51 | 1 | MONTGOMERY |
| F | | 1 | BALTIMORE CITY |
| **CHAETOMIUM** SP | | | |
| F | 8 | 1 | WICOMICO |
| **CHRYSOSPORIUM** SP | | | |
| M | 48 | 1 | BALTIMORE |
| M | 79 | 1 | TALBOT |
| F | 60 | 1 | WORCESTER |
| **CLADOSPORIUM** SP | | | |
| M | 8 | 1 | ALLEGANY |
| **COCCIDIOIDES** IMMITIS | | | |
| U | | 1 | ANNE ARUNDEL |
| **CURVULARIA** SP | | | |
| F | 29 | 1 | TALBOT |
| U | 9 | 1 | TALBOT |
| **ENGYODONTIUM** ALBUM | | | |
| M | 36 | 1 | WICOMICO |
| **EPICOCCUM** SP | | | |
| M | 49 | 1 | ALLEGANY |
| F | | 1 | TALBOT |
| **EXOPHIALA** JEANSELMEI | | | |
| F | 46 | 1 | CARROLL |
| M | 64 | 1 | OUT OF STATE |
| **FUSARIUM** SP | | | |
| M | 56 | 1 | FREDERICK |
| U | 54 | 1 | TALBOT |
| F | 58 | 1 | BALTIMORE CITY |
| U | 61 | 1 | BALTIMORE CITY |
| **HORMONEMA** DEMATIOIDES | | | |
| F | 27 | 1 | TALBOT |
| **MICROSPORUM** CANIS | | | |
| M | 9 | 1 | ALLEGANY |
| **MUCOR** SP | | | |
| F | 23 | 1 | ALLEGANY |
| **NOCARDIA** ASTEROIDES COMPLEX | | | |
| M | 20 | 1 | BALTIMORE CITY |
| **PENICILLIUM** SP | | | |
| F | 50 | 1 | BALTIMORE |
| M | 50 | 1 | BALTIMORE |
| M | 71 | 1 | CARROLL |
| F | 44 | 1 | MONTGOMERY |
| M | 80 | 1 | MONTGOMERY |
| U | 61 | 1 | MONTGOMERY |
| F | 56 | 1 | PRINCE GEORGE'S |
| M | 47 | 1 | PRINCE GEORGE'S |
| M | 68 | 1 | PRINCE GEORGE'S |
| M | 81 | 1 | TALBOT |
| M | 61 | 1 | BALTIMORE CITY |
| **PHOMA** SP | | | |
| M | 59 | 1 | TALBOT |
| **RHIZOPUS** SP | | | |
| F | 50 | 1 | BALTIMORE |
| U | 69 | 1 | CECIL |
| F | 41 | 1 | MONTGOMERY |
| **SCYTALIDIUM** SP | | | |
| F | | 1 | WICOMICO |
| **TRICHODERMA** SP | | | |
| M | 52 | 1 | BALTIMORE CITY |
| **TRICHOPHYTON** RUBRUM | | | |
| M | 36 | 1 | TALBOT |
| M | 67 | 1 | TALBOT |
| U | | 1 | WICOMICO |
| M | 53 | 1 | OUT OF STATE |
| **TRICHOPHYTON** TONSURANS | | | |
| M | 3 | 1 | CALVERT |
| F | 2 | 1 | TALBOT |
| F | 6 | 1 | TALBOT |
| M | 2 | 1 | TALBOT |
| **TRICHOSPORON** ASAHII | | | |
| F | 24 | 1 | SOMERSET |
| **TRICHOSPORON** INKIN | | | |
| F | 18 | 1 | PRINCE GEORGE'S |
| **TOTAL** | | **141** | |

## PARASITOLOGY

| **GENUS** SPECIES | # | JURISDICTION |
|---|---|---|
| PROTOZOA | | |
| **BLASTOCYSTIS** HOMINIS | 2 | FREDERICK |
| | 1 | PRINCE GEORGE'S |
| **ENDOLIMAX** NANA | 1 | MONTGOMERY |
| | 1 | PRINCE GEORGE'S |
| **ENTAMOEBA** COLI | 2 | MONTGOMERY |
| | 2 | PRINCE GEORGE'S |
| **GIARDIA** LAMBLIA | 2 | MONTGOMERY |
| I**ODAMOEBA** BUTSCHLII | 1 | MONTGOMERY |
| **TOTAL** | **12** | |
| NEMATODES | | |
| **ENTEROBIUS** VERMICULARIS | 1 | WASHINGTON |
| **TOTAL** | **1** | |

## ARTHROPOD IDENTIFICATION

**NO STATISTICS RECEIVED**

## TICK IDENTIFICATION

**NO STATISTICS RECEIVED**

## WATER MICROBIOLOGY

| | **# TESTED** | **# NON-COMPLIANT** |
|---|---|---|
| COMMUNITY | 5 | 0 |
| NON-COMMUNITY | 188 | 45 |
| **TOTAL** | **193** | **45** |

## FOOD SAFETY

**FOOD AND SHELLFISH MICROBIOLOGY**

| | **# OF SAMPLES** | **NOTABLE PATHOGENS** |
|---|---|---|
| FOOD | 4 | 0 |
| | | **# STANDARDS EXCEEDED *** |
| CRABMEAT | 0 | 0 |
| | | **# STANDARDS EXCEEDED **** |
| SHELLFISH | 0 | 0 |
| SHELLFISH GROWING WATERS | 165 | |
| OTHER: | 0 | |
| **TOTAL** | **169** | **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 |
|---|---|---|---|---|
| INFLUENZA A | | | | |
| | F | 50 | 1 | CALVERT |
| | F | 19 | 1 | PRINCE GEORGE'S |
| **SUBTOTAL** | | | **2** | |
| ADENOVIRUS | | | | |
| | M | 10 | 1 | ANNE ARUNDEL |
| **SUBTOTAL** | | | **1** | |
| HERPES SIMPLEX UNTYPABLE | | | | |
| | F | 29 | 1 | PRINCE GEORGE'S |
| | F | 27 | 1 | BALTIMORE CITY |
| **SUBTOTAL** | | | **2** | |
| HERPES SIMPLEX I | | | | |
| | F | 19 | 1 | ALLEGANY |
| | F | 20 | 1 | ALLEGANY |
| | F | 19 | 1 | ANNE ARUNDEL |
| | M | 34 | 1 | ANNE ARUNDEL |
| | M | 41 | 1 | ANNE ARUNDEL |
| | F | 21 | 1 | BALTIMORE |
| | F | 22 | 1 | BALTIMORE |
| | M | 21 | 1 | BALTIMORE |
| | F | 19 | 1 | CECIL |
| | F | 23 | 1 | FREDERICK |
| | F | 24 | 1 | FREDERICK |
| | F | 21 | 1 | PRINCE GEORGE'S |
| | M | 22 | 2 | PRINCE GEORGE'S |
| | F | 20 | 1 | SOMERSET |
| | M | 20 | 1 | TALBOT |
| | F | 17 | 1 | BALTIMORE CITY |
| | F | 19 | 1 | BALTIMORE CITY |
| | F | 21 | 1 | BALTIMORE CITY |
| | F | 22 | 1 | BALTIMORE CITY |
| | M | 31 | 1 | BALTIMORE CITY |
| **SUBTOTAL** | | | **21** | |
| HERPES SIMPLEX II | | | | |
| | F | 20 | 1 | ALLEGANY |
| | M | 21 | 1 | ALLEGANY |
| | F | 18 | 1 | ANNE ARUNDEL |
| | F | 20 | 1 | ANNE ARUNDEL |
| | F | 22 | 1 | ANNE ARUNDEL |
| | F | 28 | 1 | ANNE ARUNDEL |
| | F | 38 | 1 | ANNE ARUNDEL |
| | M | 27 | 1 | ANNE ARUNDEL |
| | F | 19 | 1 | BALTIMORE |
| | F | 21 | 2 | BALTIMORE |
| | F | 30 | 2 | BALTIMORE |
| | M | 21 | 3 | BALTIMORE |
| | M | 28 | 1 | BALTIMORE |
| | M | 29 | 1 | BALTIMORE |
| | M | 36 | 1 | BALTIMORE |
| | F | 27 | 1 | CALVERT |
| | M | 36 | 1 | CARROLL |
| | F | 24 | 1 | CHARLES |
| | F | 26 | 1 | CHARLES |
| | F | 34 | 1 | CHARLES |
| | M | 20 | 1 | CHARLES |
| | F | 21 | 1 | FREDERICK |
| | M | 23 | 2 | FREDERICK |
| | M | 31 | 1 | FREDERICK |
| | F | 23 | 1 | HARFORD |
| | F | 21 | 1 | MONTGOMERY |

| | | | |
|---|---|---|---|
| F | 19 | 1 | PRINCE GEORGE'S |
| F | 20 | 1 | PRINCE GEORGE'S |
| F | 22 | 2 | PRINCE GEORGE'S |
| F | 24 | 2 | PRINCE GEORGE'S |
| F | 28 | 1 | PRINCE GEORGE'S |
| F | 30 | 1 | PRINCE GEORGE'S |
| M | 20 | 1 | PRINCE GEORGE'S |
| M | 31 | 2 | PRINCE GEORGE'S |
| M | 33 | 1 | PRINCE GEORGE'S |
| M | 37 | 1 | PRINCE GEORGE'S |
| M | 21 | 1 | QUEEN ANNE'S |
| F | 22 | 1 | ST. MARY'S |
| F | 39 | 1 | WASHINGTON |
| F | 19 | 1 | WICOMICO |
| F | 23 | 1 | WICOMICO |
| F | 24 | 1 | WICOMICO |
| M | 40 | 1 | WICOMICO |
| F | | 2 | BALTIMORE CITY |
| F | 18 | 1 | BALTIMORE CITY |
| F | 19 | 1 | BALTIMORE CITY |
| F | 20 | 1 | BALTIMORE CITY |
| F | 21 | 2 | BALTIMORE CITY |
| F | 25 | 2 | BALTIMORE CITY |
| F | 26 | 2 | BALTIMORE CITY |
| F | 29 | 2 | BALTIMORE CITY |
| F | 30 | 2 | BALTIMORE CITY |
| F | 31 | 1 | BALTIMORE CITY |
| F | 36 | 1 | BALTIMORE CITY |
| F | 38 | 2 | BALTIMORE CITY |
| F | 41 | 1 | BALTIMORE CITY |
| F | 42 | 1 | BALTIMORE CITY |
| F | 45 | 1 | BALTIMORE CITY |
| M | | 2 | BALTIMORE CITY |
| M | 20 | 1 | BALTIMORE CITY |
| M | 21 | 1 | BALTIMORE CITY |
| M | 30 | 1 | BALTIMORE CITY |
| M | 31 | 1 | BALTIMORE CITY |
| M | 32 | 2 | BALTIMORE CITY |
| M | 33 | 1 | BALTIMORE CITY |
| M | 38 | 1 | BALTIMORE CITY |
| M | 44 | 1 | BALTIMORE CITY |
| M | 57 | 1 | BALTIMORE CITY |
| U | 25 | 1 | BALTIMORE CITY |
| F | 18 | 1 | OUT OF STATE |
| **SUBTOTAL** | | **87** | |
| **TOTAL** | | **113** | |

## VIRAL HEPATITIS

| ORGANISM | # OF SPECIMENS | POSITIVES | JURISDICTION |
|---|---|---|---|
| HEPATITIS A | | | |
| | 3 | 0 | ANNE ARUNDEL |
| | 6 | 0 | BALTIMORE |
| | 1 | 0 | CARROLL |
| | 2 | 0 | HOWARD |
| | 2 | 0 | MONTGOMERY |
| | 2 | 0 | PRINCE GEORGE'S |
| | 2 | 0 | SOMERSET |
| | 4 | 0 | BALTIMORE CITY |
| **SUBTOTALS** | **22** | **0** | |
| HEPATITIS B | | | |
| | 22 | 0 | ALLEGANY |
| | 92 | 2 | ANNE ARUNDEL |
| | 95 | 6 | BALTIMORE |
| | 2 | 0 | CALVERT |
| | 18 | 1 | CAROLINE |
| | 20 | 0 | CARROLL |
| | 101 | 0 | CECIL |
| | 6 | 0 | CHARLES |
| | 82 | 1 | FREDERICK |
| | 9 | 0 | GARRETT |
| | 64 | 0 | HARFORD |
| | 51 | 2 | HOWARD |
| | 7 | 0 | KENT |
| | 278 | 8 | MONTGOMERY |
| | 312 | 5 | PRINCE GEORGE'S |
| | 6 | 0 | QUEEN ANNE'S |
| | 2 | 0 | ST. MARY'S |
| | 4 | 0 | SOMERSET |
| | 7 | 0 | TALBOT |
| | 52 | 1 | WASHINGTON |
| | 117 | 1 | WICOMICO |
| | 7 | 0 | WORCESTER |
| | 325 | 10 | BALTIMORE CITY |
| | 14 | 0 | OUT OF STATE |
| | 1 | 0 | UNKNOWN |
| **SUBTOTALS** | **1,694** | **37** | |
| HEPATITIS C | | | |
| | 19 | 4 | ALLEGANY |
| | 106 | 33 | ANNE ARUNDEL |
| | 100 | 17 | BALTIMORE |
| | 3 | 1 | CALVERT |
| | 18 | 1 | CAROLINE |
| | 22 | 7 | CARROLL |
| | 40 | 2 | CECIL |
| | 4 | 1 | CHARLES |
| | 81 | 4 | FREDERICK |
| | 11 | 4 | GARRETT |
| | 29 | 2 | HARFORD |
| | 25 | 2 | HOWARD |
| | 5 | 1 | KENT |
| | 36 | 1 | MONTGOMERY |
| | 156 | 3 | PRINCE GEORGE'S |
| | 7 | 1 | QUEEN ANNE'S |
| | 7 | 0 | ST. MARY'S |
| | 32 | 8 | SOMERSET |
| | 6 | 0 | TALBOT |
| | 48 | 16 | WASHINGTON |
| | 18 | 2 | WICOMICO |
| | 5 | 0 | WORCESTER |
| | 359 | 106 | BALTIMORE CITY |
| | 12 | 0 | OUT OF STATE |
| **SUBTOTALS** | **1,149** | **216** | |
| **TOTALS** | **2,865** | **253** | |

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.

## CHLAMYDOPHILIA (CHLAMYDIA) PSITTACI

REPORTED QUARTERLY
NO SPECIMENS RECEIVED FROM 07/01/06 TO 09/30/06

## CD4 FLOW CYTOMETRY WORKLOAD

REPORTED QUARTERLY
COMPARING OCTOBER 2006 THROUGH DECEMBER 2006 TO OCTOBER 2005 THROUGH DECEMBER 2005

| CASE DEF. | LEVEL 1 | LEVEL 2 | LEVEL 3 | TOTAL |
|---|---|---|---|---|
| | >=29% | 28%-14% | <14% | |
| 10/06 - 12/06 | 274 | 513 | 268 | **1055** |
| 10/05 - 12/05 | 347 | 699 | 374 | **1420** |

## RABIES

| SOURCE | # | JURISDICTION |
|---|---|---|
| CAT | 1 | CARROLL |
| GROUNDHOG | 1 | MONTGOMERY |
| RACCOON | 1 | BALTIMORE |
| | 1 | CARROLL |
| | 3 | FREDERICK |
| | 1 | HOWARD |
| | 5 | MONTGOMERY |
| | 2 | PRINCE GEORGE'S |
| | 1 | ST. MARY'S |
| | 1 | TALBOT |
| | 1 | WASHINGTON |
| | 1 | WORCESTER |
| | 1 | UNKNOWN |
| SKUNK | 1 | FREDERICK |
| | 1 | PRINCE GEORGE'S |
| | 2 | ST. MARY'S |
| **TOTAL POSITIVES** | **24** | |
| **TOTAL SPECIMENS** | **299** | |

## NEWBORN & CHILDHOOD SCREENING

STATISTICS FOR DECEMBER 2006

### PRESUMPTIVE POSITIVES

| DISORDERS | # |
|---|---|
| PHENYLKETONURIA | 1 |
| MAPLE SYRUP URINE DISEASE | 5 |
| HOMOCYSTINURIA | 8 |
| TYROSINEMIA | 4 |
| ARGININEMIA | 1 |
| CITRULLINEMIA | 0 |
| GALACTOSEMIA | 4 |
| BIOTINIDASE DEFICIENCY | 1 |
| HYPOTHYROIDISM | 82 |
| HEMOGLOBIN -DISEASE | 2 |
| HEMOGLOBIN -BENIGN | 203 |
| CONGENITAL ADRENAL HYPERPLASIA (CAH) | 53 |
| CYSTIC FIBROSIS | 5 |
| FATTY ACID OXIDATIONS | 11 |
| ORGANIC ACIDEMIAS | 28 |
| ACYLCARNITINE - BORDERLINE | 13 |
| ACYLCARNITINE - OTHERS | 14 |

### MONTHLY TOTALS

| | |
|---|---|
| # OF SPECIMENS SCREENED | 10,733 |
| NUMBER OF TESTS | 728,710 |
| % OF UNSATISFACTORY SPECIMENS | 4.7 |

### YEAR-TO-DATE CONFIRMED CASES

| CONDITIONS | # CONFIRMED |
|---|---|
| MCAD | 3 |
| 3MCC | 3 |
| SCAD | 6 |
| VLCAD | 1 |
| GA-I | 1 |
| MAPLE SYRUP URINE DISEASE | 1 |
| PKU- CLINICALLY SIGNIFICANT VARIANT | 1 |
| GALACTOSEMIA- CLASSICAL GALT DEFICIENCY | 1 |
| GALACTOSEMIA - VARIANT | 3 |
| BIOTINIDASE DEFICIENCY | 1 |
| GALACTOSE EPIMERASE DEFICIENCY | 1 |
| PARTIAL BIOTINIDASE DEFICIENCY | 1 |
| CAH- CLASSICAL SALT WASTING | 3 |
| CAH-NON-CLASSICAL | 1 |
| HYPOTHYROIDISM - PRIMARY | 10 |
| SICKLE CELL DISEASE -SS | 4 |
| SICKLE CELL DISEASE -SC | 9 |
| SICKLE CELL DISEASE -S BETA THALASSEMIA | 5 |
| CYSTIC FIBROSIS | 4 |

## VIRAL LOAD SPECIMENS (DECEMBER 2006)

| HIV–1 RNA COPIES/ML | $<10^3$ | $10^3 – 10^4$ | $10^4 – 10^5$ | $>10^5$ | TOTALS |
|---|---|---|---|---|---|
| ALLEGANY | 5 | 1 | 1 | 1 | 8 |
| FREDERICK | 2 | 0 | 0 | 0 | 2 |
| MONTGOMERY | 29 | 5 | 7 | 1 | 42 |
| PRINCE GEORGE'S | 25 | 8 | 4 | 1 | 38 |
| SOMERSET | 1 | 0 | 0 | 0 | 1 |
| WASHINGTON | 2 | 1 | 0 | 0 | 3 |
| WICOMICO | 1 | 0 | 1 | 0 | 2 |
| **SUBTOTAL** | **65** | **15** | **13** | **3** | **96** |
| DEPARTMENT OF CORRECTIONS | 86 | 18 | 16 | 8 | 128 |
| **GRAND TOTAL** | **151** | **33** | **29** | **11** | **224** |

## ENVIRONMENTAL CHEMISTRY

| SAMPLES | # NON-COMPLIANT | # TESTED |
|---|---|---|
| **ASBESTOS** | | |
| AIR | 0 | 0 |
| BULK | 9 | 23 |
| **AIR QUALITY** | | |
| $PM_{2.5}$ | 0 | 346 |
| $PM_{10}$ | 0 | 0 |
| **RADIATION** | | |
| AIR/CHARCOAL FILTERS | 0 | 48 |
| MILK | 0 | 2 |
| WIPES | 0 | 36 |
| RAW WATER | 0 | 9 |
| VEGETATION | 0 | 0 |
| OTHER | 0 | 0 |
| **DRINKING WATER** | | |
| **METALS** | | |
| COMMUNITY | 11 | 19 |
| NON-COMMUNITY | 8 | 28 |
| PRIVATE WELLS | 68 | 251 |
| **PESTICIDES & PCBs** | | |
| COMMUNITY | 0 | 85 |
| NON-COMMUNITY | 0 | 73 |
| PRIVATE WELLS | 0 | 0 |
| **VOLATILE ORGANIC COMPOUNDS** | | |
| COMMUNITY | 0 | 100 |
| NON-COMMUNITY | 0 | 105 |
| PRIVATE WELLS | 0 | 113 |
| **RADIATION** | | |
| COMMUNITY | 10 | 58 |
| NON-COMMUNITY | 0 | 0 |
| PRIVATE WELLS | 0 | 0 |
| **INORGANICS** | | |
| COMMUNITY | 0 | 36 |
| NON-COMMUNITY | 4 | 33 |
| PRIVATE WELLS | 2 | 275 |
| **FOOD CHEMISTRY** | | |
| SUSPECTED TAMPERING | 0 | 3 |
| MICROSCOPIC FILTH | 0 | 3 |
| LABELING | 0 | 0 |
| SURVEILLANCE | 0 | 0 |
| CHEMICAL CONTAMINATION | 0 | 0 |
| **TOTAL** | **112** | **1,646** |

## LEAD ENVIRONMENTAL

| TEST | # | ELEV | BRL | UNSAT |
|---|---|---|---|---|
| TOTAL PAINT | 12 | 3 | 1 | 0 |
| TOTAL SOIL | 4 | 1 | 2 | 0 |
| DUST FLOOR | 360 | 40 | 283 | 0 |
| SILL | 657 | 21 | 435 | 0 |
| WELL | 254 | 15 | 149 | 0 |
| OTHER | 16 | 3 | 12 | 0 |
| **TOTAL DUST** | **1,287** | **79** | **879** | **0** |
| **GRAND TOTAL** | **1,303** | **83** | **882** | **0** |

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 | TESTS # of |
|---|---|---|---|
| MARYLAND | | | |
| | I | <10 | 118 |
| | IIA | 10-14 | 15 |
| | IIB | 15-19 | 9 |
| | III | 20-44 | 7 |
| | IV | 45-69 | 0 |
| | V | >69 | 0 |
| **TOTAL** | | | **149** |
| WASHINGTON DC | | | |
| | I | <10 | 0 |
| | IIA | 10-14 | 0 |
| | IIB | 15-19 | 0 |
| | III | 20-44 | 0 |
| | IV | 45-69 | 0 |
| | V | >69 | 0 |
| **TOTAL** | | | **0** |

## HIV ANTIBODY SCREENING – BLOOD (DECEMBER 2006)

| SPECIMEN SOURCES | TOTAL | POSITIVE EIA | % | POSITIVE WB | % |
|---|---|---|---|---|---|
| HEALTH DEPARTMENTS AND CLINICS | 2,395 | 88 | 3.67% | 72 | 81.82% |
| HOSPITALS | 112 | 7 | 6.25% | 7 | 100.00% |
| DETENTION CENTERS | 410 | 10 | 2.44% | 10 | 100.00% |
| PRIVATE PHYSICIANS | 9 | 0 | 0.00% | 0 | 0.00% |
| STUDENT HEALTH CLINICS | 276 | 1 | 0.36% | 1 | 100.00% |
| EMPLOYEE HEALTH CLINICS | 8 | 0 | 0.00% | 0 | 0.00% |
| AUTOPSIES | 331 | 18 | 5.44% | 11 | 61.11% |
| ORGAN/TISSUE DONORS | 43 | 3 | 6.98% | 0 | 0.00% |
| **TOTAL** | **3,584** | **127** | **3.54%** | **101** | **79.53%** |

MAILING LABEL

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