CRITICAL LINK

John M. Colmers
Secretary

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The Laboratories Administration—Maryland's State Public Health Laboratory

Melamine in Foods

Wonder or Blunder?

Introduction

Is melamine a 20th Century Wonder or a global industrial blunder? The death of six Chinese infants and the illness of thousands more from consumption of melamine-tainted infant formula has raised concerns, interests, and fears over the human toxicity of melamine and related compounds. On the internet, there are more than a million references concerning melamine toxicity, contamination, and industrial usage. Despite such prolific information on one compound, many people are still unaware of the implications of melamine on our food supply or the toxic effects on humans, pets, and agriculture.

In 2007, the deaths of hundreds of pets throughout North America attracted global attention to pet food adulterated with melamine. Voluntary product recall notices were issued in March 2007 by several North American manufacturers of pet food because of reports associating the products with renal failure in cats and dogs. The source of contamination was discovered to be wheat gluten, a raw material used in the production of pet food, imported into North America from China. Melamine, a nitrogen-rich adulterant in pet food,

Figure 1: Melamine dishware

would bias the total nitrogen content of an ingredient such as wheat gluten, and attracts a premium price when its *apparent* protein content is high.[1]

This situation was followed by several thousand babies in China suffering acute kidney failure, resulting in several fatalities. They were fed formula milk contaminated with the industrial

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EDCs, PPCPs, and Drinking Water

We are what we drink?

Last spring the Associated Press reported[1] that a wide range of pharmaceuticals ranging from antibiotics to sex hormones could be detected in drinking water from many sources across the U.S., including Washington, DC, Fairfax County, Virginia, and Montgomery County, Maryland.

As part of on-going strategic planning for a continually evolving scientific mission, the Laboratories Administration reviewed both the possible need to test drinking water for these contaminants and analytical methods currently available to do so.

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Melamine in Foods

chemical melamine. The addition of melamine allowed the milk producers to water down the milk and then unlawfully achieve the minimum protein content required to market the products. Investigators determined the products were exported from China, and the search began, as agencies across the world tried to determine which manufacturers were producing the adulterated products. In 2008, 22 brands of milk powder were found to contain melamine, that was intentionally added to increase the apparent protein content.

It was evident that food companies, either at the milk supplier or manufacturer end, were intentionally adding nitrogen-rich melamine to raw milk to boost the apparent protein content. Total nitrogen, a by-product of protein content, is measured in the lab using the Kjeldahl or Dumas method[2] to show the amount of protein in a food product.

The stories appearing in newspapers about melamine in milk did not address the fact that added melamine in the milk may not be pure. Impurities, such as cyanuric acid found in the raw material, add to the toxicity of the melamine. Even if melamine toxicity was not an issue, any one of the impurities associated with melamine manufacture would still be a major cause for concern. Until now, formula milk was not tested for melamine because regulators, especially in the United States, did not suspect this chemical would be added.

In September 2008, several companies were implicated in a scandal in China involving milk and infant formula. The products had been adulterated with melamine and led to kidney stones and renal failure, especially among young children. As a result, it has been estimated approximately 300,000 people had become ill, with more than 12,800 hospitalizations and six infant deaths.[3,4] Chinese officials estimate about 20% of the dairy companies tested in China were selling products adulterated with melamine.[5]

Historically, testing has been done in the interest of plastic safety and insecticide residue, but had not been routinely monitored in human or pet foods until the 2007 pet-food recalls. This lack of testing could be due in part to the assumption that melamine has low toxicity and to the relatively limited and expensive methods of determination. Melamine resin is often used in food packaging and tableware and has been detected in food and beverages due to migration from the packing materials or tableware.[6]

What is Melamine?

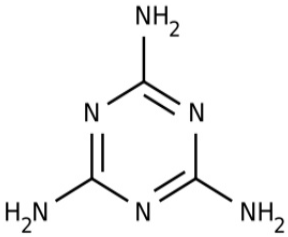

Figure 2: The molecular structure diagram of melamine. Source: http://upload.wikimedia.org/wikipedia/commons/3/36/Melamine.png

The name melamine was created by combining the words melam (a derivative of ammonia thiocyanate) and amine. Melamine was first synthesized in the 1830's by a German chemist and was first used industrially during World War II. Melamine is a small nitrogen-based organic compound and a white crystalline powder, only slightly soluble in water. Its high nitrogen level, 66% nitrogen by mass (versus 10 – 12% for typical protein), accounts for its analytical characteristics that mimic protein molecules.[7,8] Melamine is not a naturally occurring substance, but can be metabolized in the body of mammals that have ingested cyromazine (an insecticide).

The chemical analogues of melamine are cyanuric acid, ammeline, and ammelide. They have no approved use as direct additives in human or animal foods in the U.S. Melamine and its analogues are assumed to be of equal potency; however, there is no published report to show whether the analogues are more or less potent than the parent compound. Until the melamine scare occurred, melamine's occurrence in foods

generally was thought to be the result of normal food production and processing (e.g., from migration of food contact material, pesticide or fertilizer use) as opposed to adulteration.

Commercial Applications

Melamine has an array of industrial uses such as the production of laminate, adhesives, and melamine resins, some of which may contact foods leaving trace-level-detectable residues. One commercial name for melamine is *Magic Eraser*™, designed to remove scuffmarks from floors.

Melamine foam has been made into many industrial products. The building product Formica is made using melamine resin. Flame retardation is achieved using melamine in upholstery fabrics, thermal liners, heat resistant gloves, uniforms worn by firefighters, and aprons to protect from splash back of hot substances.[9] Melamine protects a wearer from heat hazards, and helps resist the spread of fire in aircraft and buses by providing a fire blocker. With our affinity for the conveniences of plastic, millions of pounds of melamine are produced every year, making melamine an ever-present compound in the industrialized societies. In some parts of the world, it is used to produce fertilizers due to its high nitrogen content; however, it is not registered for such use in the United States.

Melamine resin is also known as a thermoset plastic, since the plastic is fixed after molding. If exposed to enough heat, melamine will melt. Therefore, melamine dishware should not be exposed to high temperatures like those in the oven and microwave. However, the plastic is able to withstand higher temperatures than some other plastics. This property makes it difficult to recycle.

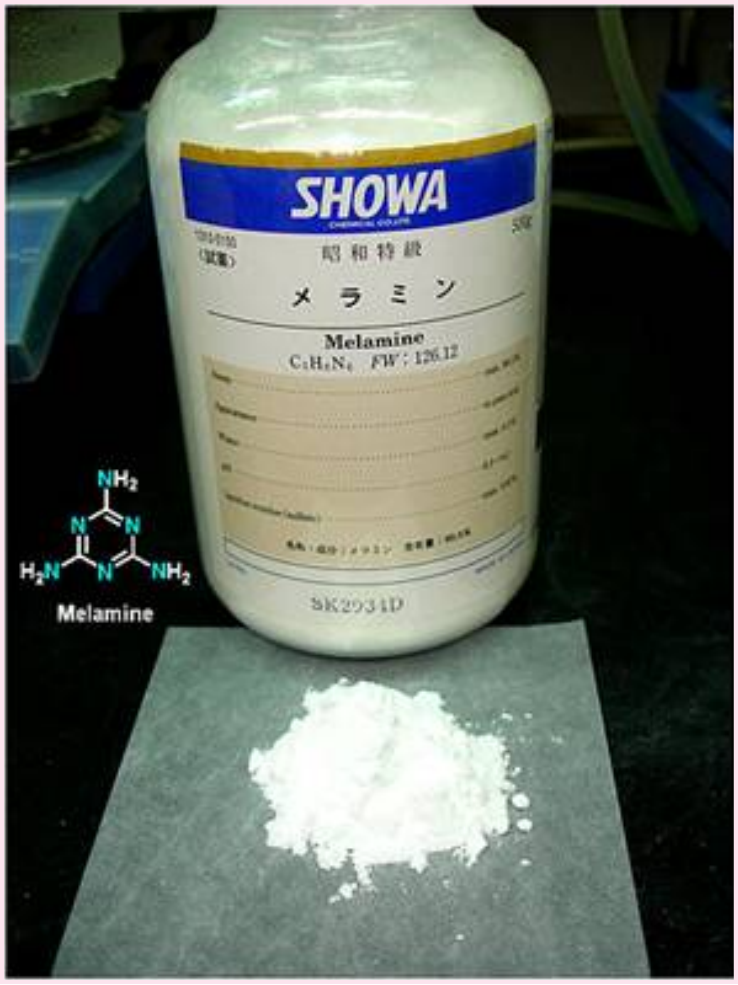

Figure 3: Melamine is a nitrogen-based organic compound in the form of a white crystalline powder, and is only slightly soluble in water.
Source: http://z.hubpages.com/u/590577_f520.jpg

Health Effects

The toxicity problem occurs when melamine is not pure. Melamine is inert, but the combinations of trimers found in the adulterated products add up, with toxicity being cumulative. An October 2008 United States Food and Drug Administration (FDA) review stated the FDA was unable to establish any melamine or melamine related compounds that did not raise public health concerns. A tolerable daily intake (TDI) has been established by the FDA at 0.63 mg/kg body weight/day with a TDI of 0.063 mg melamine/kg body weight per day for infants.[1] In November 2008, melamine and cyanuric acid were found in samples from companies in the U.S.: Nestles (Good Start Supreme formula), Mead Johnson (Enfamil Lipil with Iron formula), and Abbott Laboratories (formula not identified). All of the formulas were less than 1.0 part per million (ppm), the new acceptance limit for infant formula set by the FDA at the time.[10]

Even though there are no direct human studies on the effects of melamine on health, data from animal studies can be used to predict adverse health effects. When consumed, melamine alone causes bladder stones in animal tests. It has also been shown to have carcinogenic effects in animals in certain circumstances, but there is insufficient evidence on its carcinogenic risk in humans.

As previously stated, the U.S. Food and Drug Administration Center for Food Safety and Applied Nutrition published a Material Safety Data Sheet describing melamine as being harmful if swallowed, inhaled, or absorbed through the skin. Chronic exposure to melamine can lead to bladder or kidney stones, bladder cancer, reproductive damage, and acute kidney failure. Melamine is also an eye, skin, and respiratory irritant.

The American Society of Pediatric Nephrology (ASPN) recently released guidelines for testing and treatment of potentially melamine-exposed infants. Symptoms may include symptomatic unexplained crying, especially when urinating; irritability; vomiting;

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Melamine in Foods

unexplained fever accompanied by urinary tract infection or bacteremia; blood in the urine; kidney failure; stones discharged while passing urine; little or no urine; or high blood pressure; edema or flank pain. Any signs of these symptoms should trigger a request for urinalysis, blood urea nitrogen (BUN)/ creatinine, and renal ultrasound testing. The ASPN suggested screening focuses on children exposed to powdered formula in 2007 and 2008.

Cyanuric acid reacts with melamine at very high concentrations to form lattice crystals, melamine cyanurate. These crystals precipitate out in the small tubules of the kidneys as kidney stones. The stones in the tubules block the flow of urine from the kidneys and may lead to kidney failure. Acute renal failure and death in thousands of cats and dogs in the U.S., that were fed the suspected pet foods, have been implicated in the Chinese protein export contamina-tions. Various treatments are available depending on the severity of the blockage, including fluid infusion, urine alkalinisation, electrolyte and acid-base balance correction, hemodialysis, and surgical removal of the kidney stones.

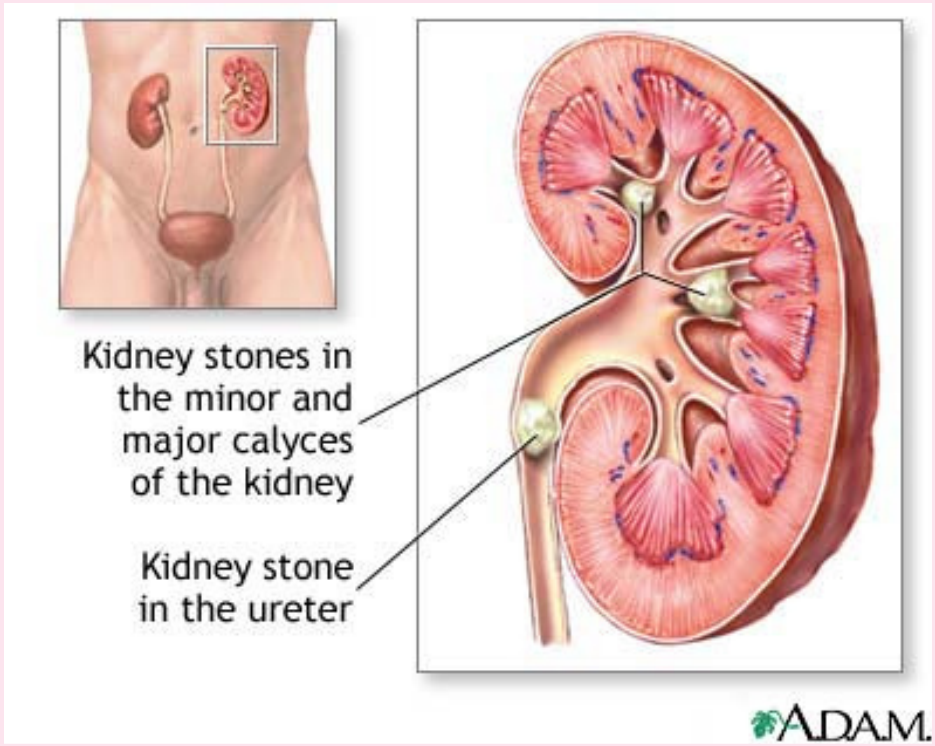

Figure 4 above: Kidney stones result when urine becomes too concentrated and substances in the urine crystalize to form stones. Source: http://apps.uwhealth.org/health/adam/hie/2/17091.htm

Figure 5 below: Food products that are affected with melamine. Source: http://www.seo.pr/images/Melamine-China-Poisoned-Milk.jpg

New Testing

In October 2008, the U.S. FDA published two new methods for the analysis of melamine and cyanuric acid in infant formulations in Laboratory Information Bulletin No 4421.[11] The FDA's methods for the analysis of melamine and its analogues are (1) *GC/MS Screen for the presence of Melamine, Ammeline, Ammelide and Cyanuric Acid*, version 2.1, and (2) *Interim Method for Determination of Melamine and Cyanuric Acid Residues in Foods using LC/MS/MS*, version 1.0. The two FDA methods are based on liquid chromatography – tandem mass spectrometry (LC/MS/MS) detection after solid phase chromatographic separation. The Food Safety and Inspection Service of the USDA also provide a test method for

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analyzing cyromazine and melamine in animal tissues.[11,12] Small amounts of melamine have also been reported in foodstuff as a metabolite product of cyromazine, an insecticide used on animals and crops.

The DHMH Laboratories Administration, Division of Environmental Chemistry has adopted the two methods published by the U.S. FDA for the determination of melamine and related compounds ammeline, ammelide and cyanuric acid in foods. The sample matrices include wheat gluten, rice protein, wet pet food, corn gluten, soybean meal and dry cat food.

If you have any questions regarding melamine testing in milk and food products, please contact the Food Safety Chemistry Section of the Division of Environmental Chemistry at 410-767-5646 / 5948.

This article was written by Amelie Hamilton.

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EDCs, PPCPs, and Drinking Water

Background

Endocrine disrupting compounds (EDCs) contain a wide range of products including pesticides, surfactants, and plasticizers (e.g., Bisphenol A, phthalates). Pharmaceutical and personal care products (PPCPs) include both human and veterinary compounds used to treat or prevent disease (e.g., steroids, antibiotics, painkillers, antidepressants), and ingredients in personal care products such as preservatives, antiseptics, detergents, and sunscreen components.

EDCs and PPCPs can be found in source waters and, in lower quantities, in finished drinking waters. In recent years, these contaminants have undergone much research because of the public attention associated with their affects on developmental and reproductive changes in amphibians and fish.[2-5]

One of the main challenges when considering the need to test for EDCs and PPCPs is that thousands of them exist in the environment and water supplies. This completely overwhelms the traditional, contaminant-by-contaminant regulatory response of government agencies.

Another problem is a lack of validated methods to monitor these contaminants, associated with both their great variety and very low concentrations (parts per billion [ug/L] to parts per trillion [ng/L]. Bioassays available to quantify EDC and PPCP activity also often lack standardization and validation for testing these contaminants; however there are published methods, such as IPA Method 1694, that use LC/MS/MS.

A third major issue when looking at EDCs and PPCPs is the lack of reliable information on their possible health significance and risk to humans. EDCs may pose their greatest risk during prenatal and early postnatal development, when organ and neural systems are developing. In animals adverse consequences (e.g., subfertility, premature reproductive senescence, and cancer) may be linked to early exposure, but not be apparent until much later in life.[6-7] While there is a large body of data from research with experimental animals, there is little evidence to prove that low-dose exposures are causing adverse human effects.[8]

In 1996, Congress passed the Food Quality Protection Act, which requires the EPA to screen the effects of pesticides on the human endocrine system. If EPA finds that substances do affect the human endocrine system, the law (21 USC 346a(p)) also instructs the EPA to take action "necessary to ensure the protection of the public health." In 1998, the EPA established the Endocrine Disruptor Screening Program (EDSP). However, the EPA then spent the next nine years developing its risk assessment process, and has yet to study the effects of any pesticide on the human endocrine system. In addition, scientific concerns have been raised over the EPA's dose-response assessment and about the influence of industry in construction of the risk assessment.[9]

Drinking Water Research

Meanwhile the Water Research Foundation (WRF) has undertaken an extensive study[10] that established a set of indicator PPCPs and potential EDCs used to evaluate the exposure and health implications from drinking water, and to

(Continued from page 5)
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develop robust analytical methods to identify and quantify the indicator compounds.

The WRF developed a list of indicator compounds based on toxicity, treatability, occurrence, structure, and analytical capabilities. Sixty-two chemicals among thousands of potential candidates were selected. These included 20 pharmaceuticals and their active metabolites, 26 suspected EDCs, five steroid hormones and 11 phytoestrogens (natural estrogens from plants).

Reliable and sensitive chemical and biological methods were also developed, using both liquid chromatography tandem mass spectrometry (LC-MS/MS) and gas chromatography tandem mass spectrometry (GC-MS/MS). The E-screen was used for biological analysis to determine the cumulative estrogenicity of compounds extracted from water samples. A series of food and beverage items also were evaluated for comparison.

Risk evaluations assuming exposure through drinking water were conducted for all target pharmaceuticals, 10 of the suspected EDCs, and three of the steroid hormones. Only three of the target compounds tested in the WRF study were detected in U.S. drinking water at a frequency greater than 50% where reporting limits were in parts per trillion or nanograms per liter (ng/L). These were the herbicide atrazine at 83%, the anti-anxiety pharmaceutical meprobamate at 78%, and the anti-eleptic pharmaceutical phenytoin at 56%. Atrazine also gave the highest concentration detected at 870 ng/L.

In finished water, only 11 of the 62 target compounds were detected in more than four test sites, and detection was highly dependent on the method reporting limit (MRL). For example, only nine of these 11 compounds would have been detected with an MRL of 10 ng/L, and only three would have been detected with an MRL of 100 ng/L.

Table 1 contains partial results on the pharmaceuticals from the WRF study. A discussion[11] of these results explained that the maximum drinking water concentrations in the second column are the highest values recorded in any

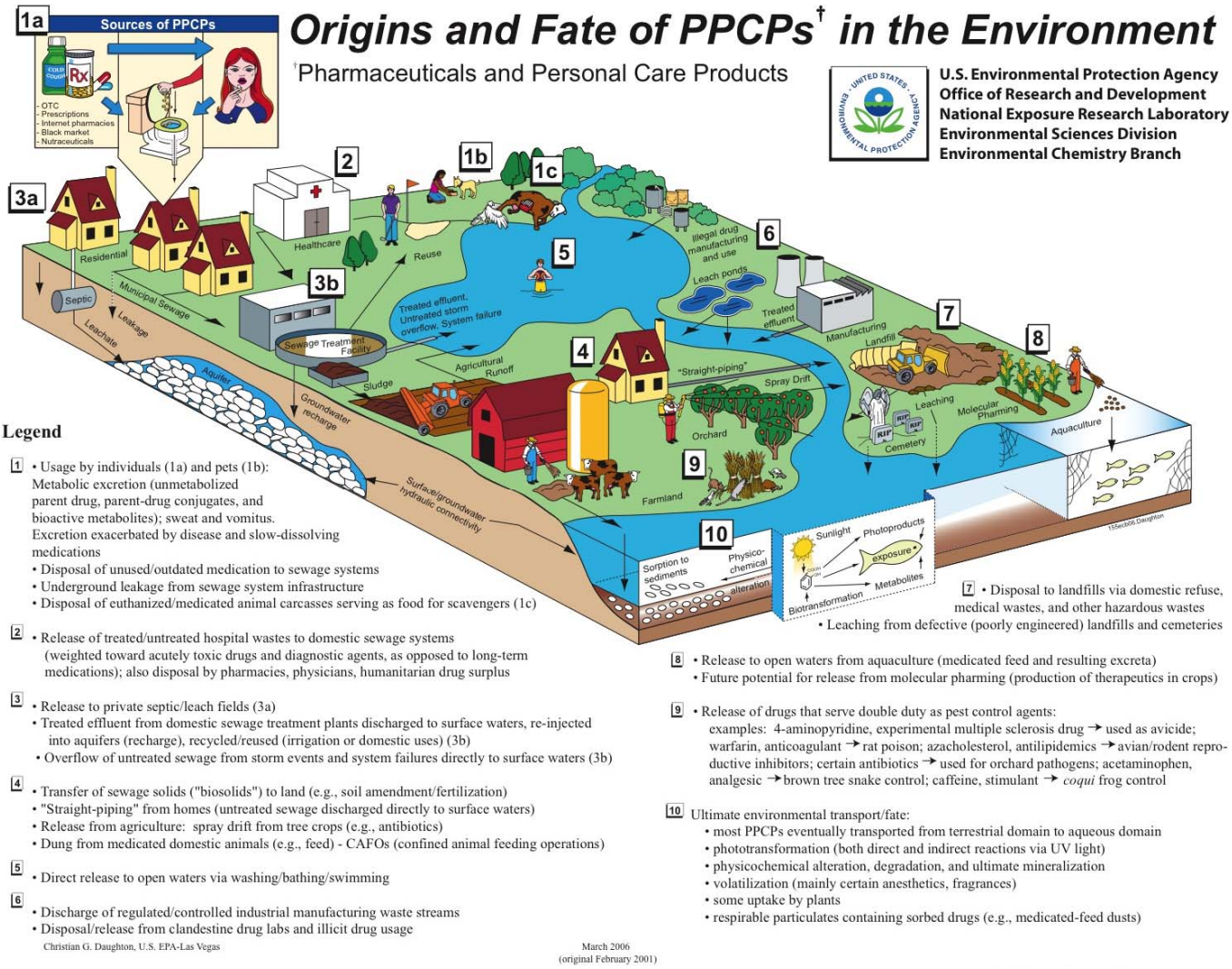

Figure 1: PPCPs in the environment. Source: http://epa.gov/nerlesd1/chemistry/pharma/images/drawing.pdf

Table 1. Summary of Drinking Water Occurrence, Risk, and Recommended Method R Reporting Limits (MRL) for Some Pharmaceuticals.[a]

Pharmaceutical	Max. Drinking Water Conc. (ug/L)	ADI[b] as a DWEL[c] (ug/L)	Liters per Day to Meet ADI dose	Recommended MRL[d] (ug/L)
Risperidone	0.003	0.49	340	0.005
Phenytoin	0.032	6.8	420	0.1
Carbamazepine	0.018	12	1,300	0.1
Diazepam	0.001	19	210,000	0.2
Fluoxetine	0.001	34	85,000	0.3
Norfluoxetine	0.001	34	91,000	0.3
Gemfibrozil	0.002	45	43,000	0.5
Atenolol	0.026	95	5,400	1.0
Meprobamate	0.042	210	12,000	2.0
Linuron	0.008	280	67,000	3.0
Sulfamethoxazole	0.003	9,800	12,000,000	100.0

[a]Table source: Khiari, D. 2008. Risk assessment and human health effects of EDCs and PPCPs. *Drinking Water Research*, 18(5)Special Issue:p.12.
[b]Acceptable daily intake (2 liters water) for a person (weighing 70 kilograms) exposed on a daily basis over a lifetime.
[c]Drinking water equivalent level.
[d]Method reporting limit.

finished water sample tested, and the recommended MRLs in column five are 100-fold lower than the acceptable daily intakes (ADIs) converted to drinking water equivalent levels (DWELs). An ADI, also known as a reference dose, is the amount of a chemical a person, with a body mass of 70 kilograms and a water consumption rate of 2 liters per day, can be exposed to on a daily basis over a lifetime without suffering a harmful effect.

For example, for fluoxetine (Prozac™), a person would need to drink over 85,000 liters of water to exceed the ADI or reference dose. A point worth making is that using the recommended MRL of 0.3 ug/L, fluoxetine would not have been detected even at its highest level.

Routine Public Health Testing

Reviewers of the WRF study interpreted the study data as showing that while some EDCs and PPCPs are detected in U.S. drinking waters, there is no evidence of human health risks from consumption of these waters. They also pointed out that exposure to estrogenic chemicals in the diet is far greater than in drinking water.[11] However, those reviewers did not and could not give any opinion on whether the low EDC and PPCP concentrations detected in the WRF study may have prenatal or perinatal adverse effects on humans.

What the WRF study did show is that in any future possible public health monitoring of EDCs and PPCPs, a limited subset of indicator compounds that occur at higher concentrations and frequencies, and that have known adverse effects on public health, could be used to routinely test for known risk to the public. However, before this monitoring can be recommended and provided by a state public health laboratory, more research is needed to identify and connect known risks to specific ADIs. When that information becomes available, the Laboratories Administration has the needed scientific expertise, and would only need additional funding for additional instrumentation, to implement a mandated environmental monitoring program for EDCs and PPCPs.

Material for this article compiled by Dr. Jack DeBoy

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Laboratory Statistics

Reported from the Laboratories Administration during the month of

November 2008

ENTERIC BACTERIOLOGY

GENUS SEROVAR	SEX	AGE	#	JURISDICTION
CAMPYLOBACTER JEJUNI				
	U	<1	1	BALTIMORE
	M	39	1	BALTIMORE
ESCHERICHIA COLI, SEROTYPE O157				
	U	<1	1	BALTIMORE CITY
ESCHERICHIA COLI, SEROTYPE O157:H7				
	F	21	1	CALVERT
	F	2	1	OUT OF STATE
	F	23	1	OUT OF STATE
	M	5	1	OUT OF STATE
SALMONELLA				
	M	76	1	ANNE ARUNDEL
	F	<1	1	BALTIMORE CITY
	F	39	1	MONTGOMERY
SALMONELLA ADELAIDE				
	U	42	1	OUT OF STATE
SALMONELLA DERBY				
	F	27	1	HARFORD
SALMONELLA ENTERITIDIS				
	U	<1	2	BALTIMORE CITY
	F	<1	1	BALTIMORE CITY
	F	35	1	BALTIMORE CITY
	M	56	3	BALTIMORE CITY
	M	3	1	BALTIMORE CITY
	M	2	1	BALTIMORE CITY
	M	2	1	BALTIMORE CITY
	F	<1	1	MONTGOMERY
	U	35	1	OUT OF STATE
	F	19	1	PRINCE GEORGE'S
	F	75	1	TALBOT
SALMONELLA HARTFORD				
	F	<1	1	MONTGOMERY
SALMONELLA HEIDELBERG				
	F	<1	1	BALTIMORE
	U	45	1	OUT OF STATE
SALMONELLA IIIA 41:Z4,Z23:-				
	M	63	1	WICOMICO
SALMONELLA LITCHFIELD				
	F	68	1	OUT OF STATE
SALMONELLA NEWPORT				
	F	<1	2	BALTIMORE
	F	37	3	BALTIMORE
	U	<1	1	BALTIMORE CITY
	M	53	1	TALBOT
SALMONELLA ORANIENBURG				
	F	25	1	FREDERICK
SALMONELLA PANAMA				
	M	<1	1	PRINCE GEORGE'S
SALMONELLA PARATYPHI A				
	F	9	1	OUT OF STATE
SALMONELLA SER TYPHI				
	M	10	1	MONTGOMERY
SALMONELLA SER TYPHIMURIUM				
	F	<1	1	ANNE ARUNDEL
	M	1	1	BALTIMORE
	F	64	2	BALTIMORE CITY
	M	53	1	MONTGOMERY
	U	9	1	OUT OF STATE
	M	4	1	OUT OF STATE
	F	43	1	WASHINGTON
SALMONELLA TYPHIMURIUM				
	F	5	1	WICOMICO
	M	3	1	WICOMICO
SALMONELLA TYPHIMURIUM VAR COPENHAGEN				
	U	10	1	OUT OF STATE
SALMONELLA UGANDA				
	F	<1	1	BALTIMORE
SALMONELLA UNTYPEABLE				
	F	75	1	OUT OF STATE
SHIGELLA				
	F	29	2	BALTIMORE CITY
	F	24	1	BALTIMORE CITY
SHIGELLA SONNEI				
	U	77	1	ANNE ARUNDEL
	F	28	1	BALTIMORE
	U	7	1	BALTIMORE CITY
	F	27	1	BALTIMORE CITY
	F	18	1	BALTIMORE CITY
	F	6	1	BALTIMORE CITY
	F	2	1	BALTIMORE CITY
	M	33	1	BALTIMORE CITY
	M	31	1	BALTIMORE CITY
	U	9	1	OUT OF STATE
	M	6	1	OUT OF STATE
VIBRIO PARAHAEMOLYTICUS				
	M	56	1	BALTIMORE CITY
	M	41	1	BALTIMORE CITY
TOTAL			**71**	

ISOLATES -THROAT CULTURES

COUNTY	GROUP A[1]	NON-GROUP A
ALLEGANY	2	10
BALTIMORE CITY	3	0
SOMERSET	0	4
WICOMICO	1	7
TOTAL	**6**	**21**

[1] *Streptococcus pyogenes*

ISOLATES - REFERENCE

GENUS SPECIES	SOURCE	#	JURISDICTION
ACINETOBACTER CALCOACETICUS-BAUMANNI COMPLEX			
	URINE	1	TALBOT
	UNKNOWN	1	WICOMICO
ENTEROCOCCUS FAECIUM			
	URINE	1	WICOMICO
ESCHERICHIA COLI			
	URINE	1	ALLEGANY
	BLOOD	1	CARROLL
KLEBSIELLA PNEUMONIAE			
	UNKNOWN	1	CARROLL
	URINE	1	CARROLL
	BLOOD	1	OUT OF STATE
	URINE	1	PRINCE GEORGE'S
	UNKNOWN	1	WICOMICO
	URINE	1	WICOMICO
PANTOEA AGGLOMERANS			
	BLOOD	3	OUT OF STATE
PSEUDOMONAS AERUGINOSA			
	URINE	1	ALLEGANY
TOTAL		**15**	

ISOLATES - MISCELLANEOUS

GENUS SPECIES	SOURCE	#	JURISDICTION
ACINETOBACTER CALCOACETICUS-BAUMANNI COMPLEX			
	WOUND	1	FREDERICK
CORYNEBACTERIUM AFERMENTANS SS LIPOPHILUM			
	BLOOD	1	BALTIMORE CITY
ENTEROBACTER AEROGENES			
	VAGINAL	1	SOMERSET
ENTEROBACTER CLOACAE			
	BLOOD	1	BALTIMORE CITY
	WOUND	1	CARROLL
	WOUND	1	FREDERICK
ENTEROCOCCUS GALLINARUM			
	BLOOD	1	BALTIMORE CITY
ESCHERICHIA COLI			
	BLOOD	2	BALTIMORE CITY
	EAR	1	CARROLL
	VAGINAL	2	MONTGOMERY
GARDNERELLA VAGINALIS			
	VAGINAL	2	PRINCE GEORGE'S
	VAGINAL	4	SOMERSET
KLEBSIELLA PNEUMONIAE			
	UNKNOWN	1	BALTIMORE CITY
PANTOEA AGGLOMERANS			
PEDIOCOCCUS			
	BLOOD	1	BALTIMORE CITY
SERRATIA MARCESCENS			
	WOUND	1	CARROLL
STAPHYLOCOCCUS AUREUS			
	WOUND	1	BALTIMORE
	BLOOD	1	BALTIMORE CITY
	CSF	1	BALTIMORE CITY
	NASAL	1	BALTIMORE CITY

WOUND	1	BALTIMORE CITY
ABSCESS	1	CARROLL
LEFT EAR	1	CARROLL
NASAL	1	CARROLL
FOOT	1	FREDERICK
WOUND	1	FREDERICK
VAGINAL	1	MONTGOMERY
VAGINAL	1	PRINCE GEORGE'S
VAGINAL	1	PRINCE GEORGE'S
STAPHYLOCOCCUS AURICULARIS		
BLOOD	1	BALTIMORE CITY
STAPHYLOCOCCUS, COAGULASE NEGATIVE		
WOUND	1	BALTIMORE CITY
WOUND	1	CARROLL
UNKNOWN	1	FREDERICK
WOUND	3	FREDERICK
STREPTOCOCCUS BETA HEMOLYTIC GROUP A		
WOUND	1	BALTIMORE CITY
STREPTOCOCCUS BETA HEMOLYTIC GROUP B		
VAGINAL	1	ANNE ARUNDEL
VAGINAL	2	ANNE ARUNDEL
VAGINAL	6	HOWARD
VAGINAL	5	PRINCE GEORGE'S
VAGINAL	4	PRINCE GEORGE'S
VAGINAL	10	PRINCE GEORGE'S
VAGINAL	2	SOMERSET
VAGINAL	2	SOMERSET
STREPTOCOCCUS MUTANS		
BLOOD	1	BALTIMORE CITY
TOTAL	**75**	

SEXUALLY TRANSMITTED DISEASES

GENUS SPECIES	SEX	#	JURISDICTION
SYPHILIS SEROLOGY			
	F	1	ANNE ARUNDEL
	F	3	BALTIMORE
	M	3	BALTIMORE
	F	14	BALTIMORE CITY
	M	24	BALTIMORE CITY
	U	2	BALTIMORE CITY
	F	1	CALVERT
	F	1	CARROLL
	F	1	DORCHESTER
	M	1	DORCHESTER
	F	1	HARFORD
	M	1	HOWARD
	F	2	MONTGOMERY
	M	3	MONTGOMERY
	F	2	OUT OF STATE
	F	11	PRINCE GEORGE'S
	M	25	PRINCE GEORGE'S
	U	1	PRINCE GEORGE'S
	F	1	QUEEN ANNE'S
	F	2	TALBOT
	M	1	UNKNOWN
	F	1	WICOMICO
	M	1	WICOMICO
	U	1	WICOMICO
	F	1	WORCESTER
TOTAL	**105**		

CHLAMYDIA TRACHOMATIS			
	M	5	ALLEGANY
	U	2	ALLEGANY
	M	17	ANNE ARUNDEL
	F	3	BALTIMORE CITY
	M	29	BALTIMORE CITY
	U	2	BALTIMORE CITY
	F	1	CHARLES
	M	13	HARFORD
	F	2	HOWARD
	M	1	HOWARD
	M	2	KENT
	F	7	MONTGOMERY
	M	27	MONTGOMERY
	F	11	PRINCE GEORGE'S
	M	32	PRINCE GEORGE'S
	U	2	PRINCE GEORGE'S
	M	4	SOMERSET
	F	4	WASHINGTON
	M	2	WASHINGTON
	F	2	WICOMICO
	M	4	WICOMICO
TOTAL	**172**		

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 plies 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.

NEISSERIA GONORRHOEAE			
	F	1	ALLEGANY
	M	1	ANNE ARUNDEL
	F	2	BALTIMORE
	M	2	BALTIMORE
	F	1	BALTIMORE CITY
	M	1	BALTIMORE CITY
	F	1	CALVERT
	M	1	CECIL
	F	4	CHARLES
	M	2	CHARLES
	F	2	DORCHESTER
	F	8	PRINCE GEORGE'S
	M	17	PRINCE GEORGE'S
	M	3	WICOMICO
	F	3	WICOMICO
TOTAL	**49**		

PENICILLIN RESISTANT GONORRHEA

REPORTED QUARTERLY
NONE REPORTED THIS QUARTER

MYCOBACTERIOLOGY

ISOLATE	SEX	AGE	#	JURISDICTION
ACID-FAST BACILLI SEEN IN CULTURE, OVERGROWN BY CONTAMINATION.				
	M	51	1	MONTGOMERY
AEROBIC ACTINOMYCETE				
	F	59	2	PRINCE GEORGE'S
MYCOBACTERIUM ABSCESSUS				
	M	33	1	ANNE ARUNDEL
	F	17	1	BALTIMORE CITY
	F	58	1	OUT OF STATE
	M	48	1	PRINCE GEORGE'S
MYCOBACTERIUM AVIUM COMPLEX				
	F	59	1	ANNE ARUNDEL
	F	73	3	ANNE ARUNDEL
	F	72	1	BALTIMORE
	F	73	1	BALTIMORE
	M	43	1	BALTIMORE
	M	88	1	BALTIMORE
	F	38	1	BALTIMORE CITY
	F	44	1	BALTIMORE CITY
	F	65	1	BALTIMORE CITY
	M	49	6	BALTIMORE CITY
	M	77	1	BALTIMORE CITY
	M	48	1	CARROLL
	M	79	1	CARROLL
	M	87	1	CARROLL
	F	58	1	FREDERICK
	F	69	1	FREDERICK
	F	83	1	FREDERICK
	F	85	1	FREDERICK
	F	80	2	MONTGOMERY
	M	29	1	MONTGOMERY
	M	93	1	MONTGOMERY
	M	70	1	TALBOT
MYCOBACTERIUM CHELONAE				
	F	80	1	WICOMICO
MYCOBACTERIUM FORTUITUM				
	M	69	1	BALTIMORE CITY
	F	73	1	FREDERICK
	M	57	1	FREDERICK
	F	71	1	HARFORD
	M	58	1	MONTGOMERY

MYCOBACTERIUM GORDONAE			
M	30	1	ALLEGANY
F	51	1	ANNE ARUNDEL
F	69	1	ANNE ARUNDEL
M	55	1	ANNE ARUNDEL
M	69	1	BALTIMORE CITY
F	49	1	FREDERICK
F	90	1	FREDERICK
F	24	4	MONTGOMERY
MYCOBACTERIUM KANSASII			
M	32	1	ALLEGANY
M	66	1	BALTIMORE
M	48	1	PRINCE GEORGE'S
MYCOBACTERIUM MARINUM			
M	67	1	ANNE ARUNDEL
MYCOBACTERIUM SIMIAE			
M	26	1	MONTGOMERY
MYCOBACTERIUM TUBERCULOSIS			
M	36	1	ANNE ARUNDEL
M	66	1	ANNE ARUNDEL
F	73	1	BALTIMORE
M	22	1	BALTIMORE
M	39	1	BALTIMORE
M	78	1	BALTIMORE
F	84	1	BALTIMORE CITY
M	37	1	BALTIMORE CITY
M	80	1	BALTIMORE CITY
F	19	1	MONTGOMERY
F	40	1	MONTGOMERY
F	45	1	MONTGOMERY
F	67	1	MONTGOMERY
F	72	1	MONTGOMERY
M	26	1	MONTGOMERY
M	34	1	MONTGOMERY
M	35	1	MONTGOMERY
M	46	1	MONTGOMERY
M	68	1	MONTGOMERY
M	73	1	MONTGOMERY
F	24	1	PRINCE GEORGE'S
MYCOBACTERIUM TUBERCULOSIS COMPLEX			
M	54	1	ANNE ARUNDEL
M	50	1	BALTIMORE
M	37	3	BALTIMORE CITY
M	80	2	CARROLL
M	25	1	FREDERICK
F	42	3	HOWARD
F	23	2	MONTGOMERY
F	24	2	MONTGOMERY
F	40	2	MONTGOMERY
F	45	2	MONTGOMERY
F	64	3	MONTGOMERY
M	35	2	MONTGOMERY
M	46	4	MONTGOMERY
M	68	2	MONTGOMERY
M	24	1	OUT OF STATE
F	20	1	PRINCE GEORGE'S
F	24	1	PRINCE GEORGE'S
M	26	1	PRINCE GEORGE'S
M	31	4	PRINCE GEORGE'S
M	36	7	PRINCE GEORGE'S
M	50	4	PRINCE GEORGE'S
M	74	1	PRINCE GEORGE'S
M	75	1	WICOMICO
MYCOBACTERIUM XENOPI			
M	55	1	BALTIMORE CITY
F	69	1	FREDERICK
RAPIDLY GROWING MYCOBACTERIA			
M	26	1	PRINCE GEORGE'S
TOTAL		**134**	

MYCOBACTERIUM SUSCEPTIBILITY RESULTS

19 ISOLATES IDENTIFIED

5 DRUG RESISTANT STRAINS FOUND

#	JURISDICTION	DRUG(S)
2	BALTIMORE	ISONIAZID, STREPTOMYCIN
1[C]	PRINCE GEORGE'S	ISONIAZID, RIFAMPIN, RIFABUTIN
1	WASHINGTON DC	RIFAMPIN, RIFABUTIN
1[B]	NIH	ISONIAZID, PYRAZINAMIDE, ETHIONAMIDE, CLOFAZIMINE

[A] TWO ISOLATES FROM THE SAME PATIENT
[B] PROBABLE FOR M. BOVIS
[C] MEETS CASE DEFINITION OF MULTI-DRUG TUBERCULOSIS (MDRTB)

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

MYCOLOGY

ISOLATE SEX	AGE	#	JURISDICTION
ALTERNARIA SPECIES			
M	69	1	TALBOT
ASPERGILLUS FLAVUS			
F	34	1	ANNE ARUNDEL
M	70	1	BALTIMORE
M	64	1	CARROLL
U	<1	2	WASHINGTON
ASPERGILLUS FUMIGATUS			
F	55	1	ALLEGANY
U	<1	1	ANNE ARUNDEL
U	69	1	BALTIMORE CITY
F	38	1	PRINCE GEORGE'S
U	<1	1	WASHINGTON
ASPERGILLUS NIDULANS			
F	70	1	TALBOT
ASPERGILLUS NIGER			
M	72	1	CALVERT
M	64	1	TALBOT
M	69	1	TALBOT
ASPERGILLUS OCHRACEUS			
M	20	1	MONTGOMERY
ASPERGILLUS SPECIES			
U	<1	2	WASHINGTON
F	58	1	WICOMICO
ASPERGILLUS TERREUS			
F	1	1	CALVERT
ASPERGILLUS VERSICOLOR			
F	72	1	ANNE ARUNDEL
BIPOLARIS SPECIES			
M	51	1	BALTIMORE CITY
M	44	1	MONTGOMERY
CANDIDA ALBICANS			
F	47	1	BALTIMORE CITY
F	65	1	BALTIMORE CITY
M	53	1	BALTIMORE CITY
M	63	1	BALTIMORE CITY
M	69	1	BALTIMORE CITY
M	76	1	BALTIMORE CITY
M	81	1	BALTIMORE CITY
F	23	1	MONTGOMERY
F	41	1	MONTGOMERY
F	48	1	MONTGOMERY
F	54	1	MONTGOMERY
F	71	1	MONTGOMERY
M	44	1	MONTGOMERY
F	18	2	PRINCE GEORGE'S
F	19	3	PRINCE GEORGE'S
F	23	1	PRINCE GEORGE'S
F	24	1	PRINCE GEORGE'S
F	30	1	PRINCE GEORGE'S
F	31	1	PRINCE GEORGE'S
F	39	1	PRINCE GEORGE'S
F	49	1	PRINCE GEORGE'S
F	55	1	PRINCE GEORGE'S
F	58	1	PRINCE GEORGE'S
F	67	1	PRINCE GEORGE'S
M	27	1	PRINCE GEORGE'S
M	72	1	PRINCE GEORGE'S
U	20	1	SOMERSET
F	18	5	SOMERSET
F	19	8	SOMERSET
F	20	1	SOMERSET
F	24	1	SOMERSET
F	58	1	WICOMICO
CANDIDA GLABRATA			
F	86	1	MONTGOMERY
F	67	1	PRINCE GEORGE'S
M	53	1	PRINCE GEORGE'S
CANDIDA LUSITANIAE			
M	66	1	BALTIMORE CITY
F	59	1	MONTGOMERY
F	62	1	PRINCE GEORGE'S
CANDIDA PARAPSILOSIS			
U	50	1	ALLEGANY
F	47	1	BALTIMORE CITY
F	27	1	CARROLL
F	55	1	PRINCE GEORGE'S
CANDIDA TROPICALIS			
M	69	1	BALTIMORE CITY
CLADOSPORIUM SPECIES			
F	18	1	ALLEGANY
F	55	1	ALLEGANY
F	82	1	TALBOT
M	23	1	TALBOT
U	<1	1	WASHINGTON
CRYPTOCOCCUS NEOFORMANS			
M	49	1	MONTGOMERY
M	84	1	PRINCE GEORGE'S
CURVULARIA SPECIES			
F	34	1	WICOMICO
EPICOCCUM SPECIES			
F	34	1	WICOMICO
FUNGUS			
M	20	1	PRINCE GEORGE'S
FUSARIUM SPECIES			
F	76	1	TALBOT
MICROSPORUM SPECIES			
M	3	1	WICOMICO
MOLD --- UNABLE TO ID FURTHER.			
U	60	1	CARROLL
U	<1	1	WICOMICO

MUCOR SPECIES			
F	52	1	WICOMICO
MYCELIA STERILIA			
M	70	1	ANNE ARUNDEL
F	60	1	BALTIMORE CITY
F	68	1	PRINCE GEORGE'S
F	65	1	MONTGOMERY
M	34	1	MONTGOMERY
M	93	1	MONTGOMERY
F	22	1	BALTIMORE
F	3	1	BALTIMORE
U	62	2	BALTIMORE CITY
F	61	2	BALTIMORE CITY
M	42	1	BALTIMORE CITY
M	54	1	BALTIMORE CITY
M	55	1	BALTIMORE CITY
M	59	1	BALTIMORE CITY
M	60	1	BALTIMORE CITY
M	63	1	BALTIMORE CITY
M	65	1	BALTIMORE CITY
M	81	1	BALTIMORE CITY
M	85	1	BALTIMORE CITY
M	86	1	BALTIMORE CITY
F	18	1	CALVERT
F	23	1	CALVERT
F	64	1	CALVERT
F	65	1	CALVERT
F	71	1	CALVERT
M	55	1	CALVERT
U	32	1	MONTGOMERY
F	<1	2	MONTGOMERY
F	28	1	MONTGOMERY
F	31	2	MONTGOMERY
F	32	1	MONTGOMERY
F	39	5	MONTGOMERY
F	40	6	MONTGOMERY
F	43	2	MONTGOMERY
F	48	1	MONTGOMERY
F	49	1	MONTGOMERY
F	50	4	MONTGOMERY
F	52	1	MONTGOMERY
F	55	1	MONTGOMERY
F	57	1	MONTGOMERY
F	60	2	MONTGOMERY
F	61	2	MONTGOMERY
F	62	2	MONTGOMERY
F	64	4	MONTGOMERY
F	68	4	MONTGOMERY
F	78	1	MONTGOMERY
F	79	7	MONTGOMERY
F	87	1	MONTGOMERY
F	88	1	MONTGOMERY
M	25	1	MONTGOMERY
M	35	2	MONTGOMERY
M	38	1	MONTGOMERY
M	42	3	MONTGOMERY
M	45	1	MONTGOMERY
M	46	2	MONTGOMERY
M	50	3	MONTGOMERY
M	51	1	MONTGOMERY
M	52	1	MONTGOMERY
M	53	1	MONTGOMERY
M	56	1	MONTGOMERY
M	57	1	MONTGOMERY
M	64	4	MONTGOMERY
M	68	1	MONTGOMERY
M	72	1	MONTGOMERY
M	76	1	MONTGOMERY
M	79	3	MONTGOMERY
M	82	3	MONTGOMERY
M	83	1	MONTGOMERY
F	18	4	PRINCE GEORGE'S
F	19	2	PRINCE GEORGE'S
F	20	6	PRINCE GEORGE'S
F	21	2	PRINCE GEORGE'S
F	22	2	PRINCE GEORGE'S
F	24	1	PRINCE GEORGE'S
F	25	1	PRINCE GEORGE'S
F	31	1	PRINCE GEORGE'S
F	47	1	PRINCE GEORGE'S
F	50	1	PRINCE GEORGE'S
F	53	1	PRINCE GEORGE'S
F	84	1	PRINCE GEORGE'S
F	88	1	PRINCE GEORGE'S
F	93	1	PRINCE GEORGE'S
M	45	1	PRINCE GEORGE'S
M	61	1	PRINCE GEORGE'S
M	62	1	PRINCE GEORGE'S
M	63	1	PRINCE GEORGE'S
M	90	1	PRINCE GEORGE'S
F	18	4	SOMERSET
F	20	1	SOMERSET
F	21	6	SOMERSET
NOCARDIA BRASILIENSIS			
F	63	1	ANNE ARUNDEL
NOCARDIA FARCINICA			
F	52	1	TALBOT
NOCARDIA NOVA			
F	69	2	BALTIMORE
NOCARDIA SPECIES			
M	69	1	BALTIMORE CITY
PAECILOMYCES SPECIES			
M	45	1	MONTGOMERY
PENICILLIUM SPECIES			
M	51	1	ALLEGANY
M	67	1	BALTIMORE CITY
M	72	1	CALVERT
F	51	1	CHARLES
F	62	1	MONTGOMERY
F	55	1	PRINCE GEORGE'S
F	67	1	PRINCE GEORGE'S
F	73	1	PRINCE GEORGE'S
F	45	1	TALBOT
F	82	1	TALBOT
U	<1	1	WASHINGTON
PHIALEMONIUM SPECIES			
F	53	1	FREDERICK
PITHOMYCES SPECIES			
F	34	1	WICOMICO
RHIZOPUS MICROSPORUS			
M	61	1	ALLEGANY
SACCHAROMYCES CEREVISIAE			
M	64	1	MONTGOMERY
STREPTOMYCES SPECIES			
M	<1	1	ALLEGANY
SYNCEPHALASTRUM RACEMOSUM			
M	53	1	TALBOT
TRICHOPHYTON TONSURANS			
F	7	1	TALBOT
TRICHOSPORON SPECIES			
M	41	1	FREDERICK
YEAST			
M	71	1	CARROLL
TOTAL		**275**	

WATER MICROBIOLOGY

	# TESTED	# NON-COMPLIANT
COMMUNITY	2	0
NON-COMMUNITY	324	82
TOTAL	**326**	**82**

PARASITOLOGY

GENUS/SPECIES	#	JURISDICTION
BLASTOCYSTIS HOMINIS		
	1	MONTGOMERY
	1	HOWARD
	4	MONTGOMERY
	2	BALTIMORE CITY
	1	PRINCE GEORGE'S
	1	FREDERICK
	2	PRINCE GEORGE'S
	1	HOWARD
	2	PRINCE GEORGE'S
	4	MONTGOMERY
	1	BALTIMORE CITY
	1	PRINCE GEORGE'S
	2	FREDERICK
	1	WICOMICO
	2	MONTGOMERY
CHILOMASTIX MESNILI		
	1	PRINCE GEORGE'S
DIENTAMOEBA FRAGILIS		
	1	MONTGOMERY
	1	PRINCE GEORGE'S
	1	MONTGOMERY
	2	FREDERICK
	2	HOWARD
ENDOLIMAX NANA		
	3	MONTGOMERY
	1	BALTIMORE CITY
	1	PRINCE GEORGE'S
	1	HOWARD
	3	PRINCE GEORGE'S
	1	MONTGOMERY
	1	BALTIMORE CITY
	1	PRINCE GEORGE'S
	2	BALTIMORE CITY
	1	PRINCE GEORGE'S
ENTAMOEBA COLI		
	1	BALTIMORE CITY
	2	PRINCE GEORGE'S
	1	MONTGOMERY
	1	FREDERICK
	1	PRINCE GEORGE'S
ENTAMOEBA HARTMANNI		
	1	MONTGOMERY
	2	ANNE ARUNDEL
ENTEROBIUS VERMICULARIS		
	1	CARROLL
	1	MONTGOMERY
GIARDIA LAMBLIA		
	3	FREDERICK
	1	FREDERICK
HOOKWORM		
	1	BALTIMORE CITY
	1	PRINCE GEORGE'S
IODAMOEBA BÜTSCHLII		
	1	BALTIMORE CITY
TRICHURIS TRICHIURA		
	1	BALTIMORE CITY
TOTAL	**68**	

FOOD SAFETY & SECURITY

FOOD
41 SAMPLES
2 NOTABLE PATHOGENS:
11 SALMONELLA SP.
7 CAMPYLOBACTER SP.

CRABMEAT
0 SAMPLES
0 EXCEEDING STANDARDS[1]
NOTABLE PATHOGENS:
NONE

SHELLFISH
0 SAMPLES
0 EXCEEDING STANDARDS[2]
NOTABLE PATHOGENS:
NONE

SHELLFISH GROWING WATERS
180 SAMPLES

221 TOTAL SAMPLES
18 TOTAL STANDARDS EXCEEDED

STANDARDS

[1]CRABMEAT FRESH
ESCHERICHIA COLI AT < 36 MPN/100 GRAMS
STANDARD PLATE COUNT AT < 100,000 PER GRAM

[2]SHELLFISH
FECAL COLIFORMS AT < 230 MPN/100 GRAMS
STANDARD PLATE COUNT AT < 500,000 PER GRAM

VIRUS ISOLATION

SEX	AGE	#	JURISDICTION
ADENOVIRUS			
M	7	1	TALBOT
SUBTOTAL		**1**	
HERPES SIMPLEX VIRUS TYPE 1			
F	17	1	PRINCE GEORGE'S
M	39	1	BALTIMORE CITY
F	18	1	BALTIMORE CITY
SUBTOTAL		**3**	
TOTAL		**4**	

VIRAL POLYMERASE CHAIN REACTION (PCR)

SEX	AGE	#	JURISDICTION
HERPES SIMPLEX VIRUS TYPE 1			
F	20	1	ALLEGANY
F	24	1	ANNE ARUNDEL
F	26	1	ANNE ARUNDEL
F	30	2	ANNE ARUNDEL
F	26	1	BALTIMORE
F	<1	1	BALTIMORE CITY
F	18	1	BALTIMORE CITY
F	19	1	BALTIMORE CITY
F	20	1	BALTIMORE CITY
F	25	1	BALTIMORE CITY
M	25	1	CECIL
F	28	1	HARFORD
F	19	1	PRINCE GEORGE'S
F	21	3	PRINCE GEORGE'S
F	22	1	PRINCE GEORGE'S
F	30	1	PRINCE GEORGE'S
M	26	1	PRINCE GEORGE'S
F	<1	1	WICOMICO
M	21	1	WICOMICO
HERPES SIMPLEX VIRUS TYPE 2			
F	17	1	ANNE ARUNDEL
F	27	1	ANNE ARUNDEL
F	20	1	BALTIMORE
F	23	1	BALTIMORE
F	24	1	BALTIMORE
F	26	2	BALTIMORE
F	38	1	BALTIMORE
M	27	1	BALTIMORE
U	29	1	BALTIMORE CITY
U	50	1	BALTIMORE CITY
F	<1	1	BALTIMORE CITY
F	16	1	BALTIMORE CITY
F	18	2	BALTIMORE CITY
F	20	1	BALTIMORE CITY
F	21	1	BALTIMORE CITY
F	22	3	BALTIMORE CITY
F	23	1	BALTIMORE CITY
F	26	1	BALTIMORE CITY
F	27	1	BALTIMORE CITY
F	30	1	BALTIMORE CITY
F	31	1	BALTIMORE CITY
F	34	1	BALTIMORE CITY
F	38	1	BALTIMORE CITY
M	18	1	BALTIMORE CITY
M	20	1	BALTIMORE CITY
M	23	3	BALTIMORE CITY
M	25	1	BALTIMORE CITY
M	27	2	BALTIMORE CITY
M	38	1	BALTIMORE CITY
M	39	1	BALTIMORE CITY
M	41	1	BALTIMORE CITY
M	55	1	BALTIMORE CITY
M	61	1	BALTIMORE CITY
F	28	1	CARROLL
U	37	1	CHARLES
F	22	1	CHARLES
F	34	1	CHARLES
M	20	1	CHARLES
M	26	1	CHARLES
M	29	1	CHARLES
F	30	1	FREDERICK
F	22	1	HARFORD
F	40	1	HARFORD
F	25	1	HOWARD
M	66	1	MONTGOMERY
F	19	3	PRINCE GEORGE'S
F	26	1	PRINCE GEORGE'S
M	22	1	PRINCE GEORGE'S
M	24	1	PRINCE GEORGE'S
M	30	1	PRINCE GEORGE'S
M	24	1	SAINT MARY'S
F	18	1	SOMERSET
M	19	1	SOMERSET
F	20	1	WICOMICO
F	32	1	WICOMICO
M	24	1	WICOMICO
M	28	1	WICOMICO
M	54	1	WICOMICO
INFLUENZA A VIRUS			
F	1	1	BALTIMORE CITY
TOTAL		**90**	

VIRAL HEPATITIS

ORGANISM	# SPECIMENS	# POSITIVES	JURISDICTION
HEPATITIS A			
	1	0	BALTIMORE
	2	0	PRINCE GEORGE'S
SUBTOTAL	**3**	**0**	
HEPATITIS B			
	61	1	ALLEGANY
	136	2	ANNE ARUNDEL
	53	1	BALTIMORE
	561	9	BALTIMORE CITY
	8	0	CALVERT
	32	0	CARROLL
	108	2	CECIL
	2	0	CHARLES
	57	0	FREDERICK
	9	0	GARRETT
	45	0	HARFORD
	29	1	HOWARD
	1	0	KENT
	270	4	MONTGOMERY
	2	0	PRINCE GEORGE'S
	337	6	PRINCE GEORGE'S
	3	0	QUEEN ANNE'S
	3	0	SOMERSET
	13	0	TALBOT
	4	0	UNKNOWN
	36	0	WASHINGTON
	97	0	WICOMICO
SUBTOTAL	**1,867**	**26**	
HEPATITIS C			
	45	3	ALLEGANY
	159	45	ANNE ARUNDEL
	54	1	BALTIMORE
	293	70	BALTIMORE CITY
	6	1	CALVERT
	32	7	CARROLL
	49	4	CECIL
	6	0	CHARLES
	62	3	FREDERICK
	10	0	GARRETT
	26	2	HARFORD
	4	0	HOWARD
	1	0	KENT
	26	0	MONTGOMERY
	2	1	PRINCE GEORGE'S
	184	2	PRINCE GEORGE'S
	3	0	QUEEN ANNE'S
	1	0	SAINT MARY'S

10	1	TALBOT
3	0	UNKNOWN
13	2	WASHINGTON
19	0	WICOMICO
SUBTOTAL		
1,008	**142**	
TOTALS		
2,878	**168**	

RABIES

SOURCE	#	JURISDICTION
CAT	1	CALVERT
	1	SOMERSET
GOAT	1	PRINCE GEORGE'S
GROUNDHOG	1	HARFORD
RACCOON	3	BALTIMORE
	1	CAROLINE
	1	DORCHESTER
	2	MONTGOMERY
	1	PRINCE GEORGE'S
	1	QUEEN ANNE'S
	1	ST. MARY'S
	1	SOMERSET
	1	TALBOT
	1	WASHINGTON
	1	WICOMICO
	1	WORCESTER
	2	BALTIMORE CITY
SKUNK	2	ALLEGANY
	1	QUEEN ANNE'S
	1	WASHINGTON
TOTAL POSITIVES	**25**	
TOTAL SPECIMENS	**264**	

CHLAMYDIOPHILIA PSITTACI
(CHLAMYDIA)

REPORTED QUARTERLY
NO REPORT THIS MONTH

CD4 FLOW CYTOMETRY WORKLOAD

REPORTED QUARTERLY
NO REPORT THIS MONTH

BLOOD LEAD

MARYLAND

I	<10	88
IIA	10-14	2
IIB	15-19	8
III	20-44	4
IV	45-69	1
V	>69	0
TOTAL		**103**

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**

NEWBORN & CHILDHOOD SCREENING

PRESUMPTIVE POSITIVES

DISORDERS	#
PHENYLKETONURIA	2
MAPLE SYRUP URINE DISEASE	6
HOMOCYSTINURIA	17
TYROSINEMIA	5
ARGININEMIA	2
CITRULLINEMIA	0
GALACTOSEMIA	2
BIOTINIDASE DEFICIENCY	0
HYPOTHYROIDISM	45
HEMOGLOBIN - DISEASE	12
HEMOGLOBIN - BENIGN	416
CONGENITAL ADRENAL HYPERPLASIA (CAH)	25
CYSTIC FIBROSIS	6
FATTY ACID OXIDATIONS	6
ORGANIC ACIDEMIAS	12
ACYLCARNITINE - BORDERLINE	5
ACYLCARNITINE - OTHERS	0

MONTHLY TOTALS

# OF SPECIMENS SCREENED	9,114
NUMBER OF TESTS	569,867
% UNSATISFACTORY SPECIMENS	2

YEAR-TO-DATE CONFIRMED CASES

CONDITIONS	# CONFIRMED
MCAD	3
3MCC	2
SCAD	2
VLCAD	1
GA-I	1
IVA	1
PA	1
MAPLE SYRUP URINE DISEASE	
PKU- CLINICALLY SIGNIFICANT VARIANT	1
CLINICALLY SIGNIFICANT VARIANT HYPERPHENYLALANINEMIA (NOT CLASSICAL PKU)	3
VARIANT HYPERPHENYL-ALANINEMIA (NOT CLINICALLY SIGNIFICANT)	1
CITRULINEMIA I (CIT-I)	1
GALACTOSEMIA - CLASSICAL GALT DEFICIENCY	4
GALACTOSEMIA - VARIANT	1
BIOTINIDASE DEFICIENCY	0
GALACTOSE EPIMERASE DEFICIENCY	0
PARTIAL BIOTINIDASE DEFICIENCY	0
CAH- CLASSICAL SALT WASTING	2
CAH-NON-CLASSICAL	0
HYPOTHYROIDISM - PRIMARY	21
OTHER HYPOTHYROIDISM	12
SECONDARY HYPOTHYROIDISM	3
SICKLE CELL DISEASE -SS	13
SICKLE CELL DISEASE -SC	6
SICKLE CELL DISEASE -SE	1
SICKLE CELL DISEASE -S BETA THALASSEMIA	5
CYSTIC FIBROSIS	8

ENVIRONMENTAL CHEMISTRY

SAMPLES	# NON-COMPLIANT	# TESTED
ASBESTOS		
AIR	0	0
BULK	2	8
AIR QUALITY		
$PM_{2.5}$	0	679
PM_{10}	0	0
RADIATION		
AIR/CHARCOAL FILTERS	0	74
MILK	0	5
WIPES	0	40
RAW WATER	0	8
VEGETATION	0	0
OTHER	0	10
DRINKING WATER		
METALS		
COMMUNITY	6	30
NON-COMMUNITY	6	18
PRIVATE WELLS	55	260
PESTICIDES & PCBs		
COMMUNITY	0	72
NON-COMMUNITY	0	48
PRIVATE WELLS	0	0
VOLATILE ORGANIC COMPOUNDS		
COMMUNITY	13	183
NON-COMMUNITY	0	72
PRIVATE WELLS	0	73
RADIATION		
COMMUNITY	5	22
NON-COMMUNITY	0	2
PRIVATE WELLS	1	4
INORGANICS		
COMMUNITY	0	18
NON-COMMUNITY	1	40
PRIVATE WELLS	0	112
FOOD CHEMISTRY		
SUSPECTED TAMPERING	0	0
MICROSCOPIC FILTH	0	4
LABELING	0	0
SURVEILLANCE	0	4
CHEMICAL CONTAMINATION	0	2
TOTAL	**89**	**1,696**

VIRAL LOAD SPECIMENS

HIV-1 RNA COPIES/ML	$<10^3$	10^3—10^4	10^4—10^5	$>10^5$	**TOTALS**
ALLEGANY	9	1	1	0	**11**
FREDERICK	3	0	0	0	**3**
MONTGOMERY	70	14	19	4	**107**
PRINCE GEORGE'S	86	13	12	5	**116**
SOMERSET	1	1	0	0	**2**
WASHINGTON	4	0	0	0	**4**
WICOMICO	2	2	1	0	**5**
SUBTOTALS	175	31	33	9	**248**
DEPT. OF CORRECTIONS	24	11	7	2	**44**
TOTALS	**199**	**42**	**40**	**11**	**292**

HIV ANTIBODY SCREENING

	TOTAL SPECIMENS	# EIA POSITIVE	% EIA POSITIVE	# WB POSITIVE	% WB POSITIVE
HEALTH DEPARTMENTS AND CLINICS	2,216	105	4.74%	102	97.14%
HOSPITALS	118	7	5.93%	7	100.00%
DETENTION CENTERS	195	1	0.51%	1	100.00%
PRIVATE PHYSICIANS	6	0	0.00%	0	0.00%
STUDENT HEALTH CLINICS	271	1	0.37%	0	0.00%
EMPLOYEE HEALTH CLINICS	7	0	0.00%	0	0.00%
AUTOPSY (MEDICAL EXAMINER/ HOSPITAL CASES)	288	5	1.74%	4	80.00%
ORGAN/TISSUE DONORS (ANATOMY BOARD/EYE BANK)	59	2	3.39%	1	50.00%
TOTALS	**3,160**	**121**	**3.83%**	**115**	**95.04%**

MAILING LABEL

Critical Link
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