



**Maryland Department of Health and Mental Hygiene  
Montgomery County Department of Health and Human Services**

# **INVESTIGATION OF CANCER CONCERNS IN POOLESVILLE, MARYLAND**

## **FINAL REPORT**

**AUGUST 2, 2010**

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## **EXECUTIVE SUMMARY**

This report summarizes the findings of the Maryland Department of Health and Mental Hygiene (DHMH) and the Montgomery County Department of Health and Human Services (DHHS) regarding concerns about cancer in Poolesville, Maryland that were raised in November 2008 in conjunction with water quality concerns.

DHMH and DHHS jointly evaluated the cancer concerns raised by Poolesville residents through a review of Maryland Cancer Registry (MCR) cases, consultation with the Maryland Department of the Environment (MDE) regarding the history of previous activities related to water quality, a review of environmental data available from the Montgomery County Department of Environmental Protection (DEP), hazardous waste site data, and a review of publicly available data on water quality testing in Poolesville Water Quality Reports, as well as discussions with MDE's Water Quality Administration.

While the preliminary analysis of MCR data did not show any specific concerns about cancer numbers overall, reports to DHHS from the community suggested a need for additional input from federal partners to address community questions regarding cancer concerns. For that reason, DHMH requested assistance from the U.S. Centers for Disease Control and Prevention (CDC) on January 28, 2009 in the form of an Epi-Aid request to help clarify issues related to cancer concerns in the Poolesville community.

Several environmental concerns were raised by residents, including naturally occurring radioactivity in groundwater, potential air contaminants from point sources in Montgomery County, or other factors. Available data did not suggest any obvious single source, although elevations were noted sporadically in naturally occurring radioactivity in drinking water.

The CDC evaluation showed that the number and distribution of cancer cases within Poolesville are not significantly different from cancer in Montgomery County and Maryland as a whole during the same time period. CDC recommended further analysis once more current cases are available from the MCR. At the community meeting held on July 20, 2009, the CDC findings were provided by both DHMH and DHHS and both pledged to return to the community with a final report after updates to the Maryland Cancer Registry. This report summarizes an updated analysis of cancer cases reported to MCR from 1992 through 2007. The updated analysis also concludes that the overall number and pattern of cancer cases within Poolesville are not significantly different from the pattern and number of cases in Montgomery County and Maryland as a whole.

## **BACKGROUND**

The Department of Health and Mental Hygiene's Center for Environmental Health Coordination (DHMH) and Maryland Cancer Registry (MCR) were contacted by the Montgomery County Department of Health and Human Services (DHHS) on November 9, 2008 regarding a consumer concerned about well water and its potential link to cancer cases in Poolesville, Maryland. The concern related to a number of different types of cancer, and radium and uranium in well water.

In response to this initial inquiry, DHMH, MCR, and DHHS conducted a number of activities, including:

1. A review of available MCR data for Poolesville, for Montgomery County, and for the state as a whole.
2. A discussion with Maryland Department of the Environment (MDE) and Montgomery County DHHS regarding the history of previous activities related to water quality.
3. A review of environmental data available from the Montgomery County Department of Environmental Protection.
4. A review of hazardous waste site data on MDE public website contained in the Land Restoration Program's Geographic Information System, and the U.S. EPA's Toxic Release Inventory.
5. A review of publicly available data on water quality testing in Poolesville Water Quality Reports, as well as discussions with MDE's Water Quality Administration.

Subsequently, at an open community meeting on January 26, 2009, DHHS and DHMH reported to the community that although the preliminary analysis of MCR data did not show any specific concerns about cancer numbers overall, reports to DHHS from the community had raised questions about cancers that could not at the time be answered completely by the MCR. For that reason, DHMH requested assistance from the U.S. Centers for Disease Control and Prevention (CDC) in the form of an Epi-Aid request (shown in Appendix 1) to help clarify issues related to cancer concerns in the Poolesville community.

Based on the preliminary findings by the CDC showing no obvious pattern of cancer occurrences (but acknowledging that further analysis would be helpful), a subsequent meeting was held with the community on July 20, 2009. At that meeting, both DHMH and Montgomery County DHHS committed to return to the community with a final report after updates were made to the Maryland Cancer Registry.

This report contains the final analysis and recommendations of DHMH and DHHS, including CDC recommendations, regarding cancer in Poolesville, Maryland. The structure of the investigation has followed the Guidelines for the Management of Inquiries Related to Cancer Concerns or Suspected Cancer Clusters recently adopted by DHMH (DHMH, 2010).

## COMMUNITY DESCRIPTION

### **Definition of Poolesville and Population of Interest**

Poolesville is a community of approximately 5,000 individuals located in western Montgomery County.<sup>1</sup> The town boundaries (Figure 1) enclose an area of 3.9 square miles. The Poolesville zip code 20837 (Figure 2) is significantly larger in area and includes 6,000 individuals.<sup>1</sup> It is important to note that health statistics are sometimes available only by zip code, and this can lead to some uncertainty in interpreting health statistics of populations within this larger area (particularly when trying to define the population of interest).

The town of Poolesville was incorporated in 1867. It has seen significant growth in the past several decades. The 2000 Census<sup>1</sup> showed the population of 5,151 was 49.1% male, 50.9% female, with a median age of 35 years. Racially, the community is somewhat more homogeneous than Montgomery County as a whole. Over 48 percent of married-couple households in Poolesville have children under 18 years compared to 28 percent of married-couple households county-wide. Consequently, Poolesville has a larger proportion of its population that are children under 18 years and adults that are 35-54 years. Overall demographic data for Poolesville, Montgomery County and Maryland are shown in Table 1.

The zip code of 20837 that includes Poolesville has similar socio-demographic characteristics as the town of Poolesville (Table 1). Some important differences include the older population in the 20837 zip code being larger than that in the town of Poolesville for the number of residents over the age of 55 years.<sup>1</sup>

### **Community Concerns**

Community members expressed concerns about a number of issues during public meetings with elected and agency officials. In addition, both DHHS and DHMH were contacted by individuals with specific questions and concerns, that are incorporated here without attribution in order to preserve privacy. The questions and concerns were addressed in *Frequently Asked Questions* during the investigation, and are also addressed in this report. The topics and questions raised are shown in Table 2.

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<sup>1</sup> U.S. Census Bureau. 2000 Census. Accessed on FactFinder on July 6, 2010.  
([http://factfinder.census.gov/home/saff/main.html?\\_lang=en](http://factfinder.census.gov/home/saff/main.html?_lang=en))

## **ENVIRONMENTAL DATA**

The assessment of potential environmental factors in the Poolesville area was conducted with input from the Maryland Department of the Environment and the Montgomery County Department of Environmental Protection. The goal was to conduct an inventory of potential environmental hazards, based on available data sources. These included:

- Air quality data
- Water quality data
- Hazardous waste sites
- Point sources
- History of land use

### **Air Quality**

Air quality data for the Poolesville area is available from Maryland's Environmental Public Health Tracking project (EPHT), using air quality data from fixed monitoring stations. Although there are no fixed monitoring stations in Poolesville, there is historical and current data on air quality for Montgomery County which probably overestimates any potential exposures because the air monitoring station is in a more urbanized area than Poolesville. Montgomery County is considered a non-attainment county for particulate matter less than 2.5 microns and 8-hour ozone concentration. There is no reason to suspect air quality in Poolesville was worse than air quality in Montgomery county overall.

### **Drinking Water Supply to Poolesville, MD**

A significant issue in this investigation has been the water supply to Poolesville. Poolesville is supplied by an aquifer known as the Maryland Piedmont Aquifer. This is a designated sole source aquifer, as defined by the U.S. Environmental Protection Agency. Water is supplied by 9 wells of 285 to 800 feet in depth. Currently the town is allowed to withdraw an average of 650,000 gallons per day, with a maximum monthly average of 910,000 gallons per day.

According to recent water quality reports there have been no recent exceedances of the drinking water standards for synthetic organic pollutants, or regulated inorganic pollutants. Of the radioactive contaminants about which concern has been expressed (summarized in Table 3), there has been one measured exceedance<sup>2</sup> of the maximum contaminant level (MCL) for uranium in a well. It was noted that this was an inconclusive test, and that monitoring had been increased. In addition, while there are no existing standards for radon, EPA is considering two (2) different MCLs for radon, one of which is substantially below measured radon levels in the Poolesville water supply, while another, alternative MCL (which would be applied in

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<sup>2</sup> 2007 Poolesville Water Quality Report. Accessed December 2009 at <http://www.ci.poolesville.md.us/index.html> . For 2009-2010 Water Quality Report, visit <http://www.ci.poolesville.md.us/2009ccr.pdf>

conjunction with a comprehensive multi-media program to reduce radon in indoor air) is substantially above levels measured in the Poolesville water.

### **Potentially Significant Industrial and Waste Sites**

According to the Montgomery County Department of Environmental Protection, there were a total of 342 enforcement cases for the Dickerson zip code (20842) from 1994 to present. Of these 342 cases, the vast majority (274) were related to air issues (mostly agricultural burning permits) and illegal dumping.<sup>3</sup> There were also several complaints about odors and visible emissions related to a leaf composting facility and a waste to energy plant. However, both the Montgomery County Waste to Energy (WTE) facility and the Twin Ponds natural wood waste composting facility are precluded from accepting hazardous wastes by their permit, and MDE is unaware of any instances in which they have accepted hazardous waste. Other areas of concern to note were Neutron Products and the Mirant Ash Landfill. Also in nearby Poolesville there is a state permitted natural wood waste processing facility, Twin Ponds Farm, LLC, and the Butch Comer property, which was a dump that caught on fire sometime in the 1980's.

There are limited data available from which to evaluate potential risks of environmental exposures in the Poolesville area. A review of land use in the area indicates that most of the property was at one time farmland. There are no facilities in zip code 20837 listed in the EPA Toxic Release Inventory (TRI) from the most recent data set (release year 2008).<sup>4</sup> However, residents did raise concern about several other facilities in Western Montgomery County. These included facilities that were also identified both in the Toxic Release Inventory and the MDE non-master site list, including a waste-to-energy incinerator, the Mirant generating station, and Neutron Products, Inc., both located in Dickerson. There are also no facilities in the area on the MDE State master list of hazardous waste sites, while there are two (2) sites on the MDE non-master site list, but neither (Neutron Products to the north, and Harrison Drum Island to the west) is within a four (4) mile radius of the town's center (according to the MDE Land Restoration Program website). No other significant point sources were identified within the investigation area.

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<sup>3</sup> Email correspondence with David W. Lake, Special Assistant/Office of the Director, Water and Wastewater Policy, Montgomery County Department of Environmental Protection, May 28, 2009.

<sup>4</sup> <http://toxmap.nlm.nih.gov/toxmap/combo/applyDemographics.do>

## **HEALTH DATA**

Concerns about cancer in the community that were expressed to both DHMH and Montgomery County Health and Human Services included the following:

- General concerns about the overall cancer rate in the area
- Concerns about specific types of cancers that might be linked to environmental hazards or exposures

Ordinarily, cancer rates are calculated for counties only, not for smaller geographic areas, because the small number of cancers that occur in smaller areas cannot be disclosed without violating confidentiality policies.

Figure 3 shows incidence rates in Maryland for all cancer sites by geographic area, compared with the U.S. rate for the same period (2002-2006). Montgomery County's overall cancer rate was in line with the U.S. rate for the same period.

An initial analysis of cancer cases in Poolesville was conducted by DHMH and DHHS. Two sources of data on cancer cases were used: (1) cancers reported to the Maryland Cancer Registry (MCR); and (2) cancers reported by individuals to DHHS. This analysis was complicated by several factors:

- Date of Diagnosis. The MCR data do not contain all cancer cases in the state. There is generally a lag of about 2 years until data in the MCR are judged to be "official," which means that currently and newly diagnosed cancers (including some reported to DHHS) were not listed in the cases found in the MCR data set.
- Residency versus location of diagnosis. The MCR contains data on cancers that are diagnosed in Maryland. This means that cancers for Maryland residents who are diagnosed in other states (or the District of Columbia) are not initially reported to the MCR, but to the registry in the state where the cancer was diagnosed. That registry is then supposed to report the case to the MCR, but there may be an additional time lag in that reporting.
- Length and locations of residence. Cases within the MCR contain the address at the time of diagnosis, but do not indicate historical data on place of residence. Therefore, it is not usually possible to know how long a person diagnosed with cancer was living at the address in question.

### **Initial DHMH-DHHS Review of Available Cancer Data for Poolesville**

The initial review of cancer in Poolesville used 1994-2003 data from the MCR and additional cases reported to DHHS. At the time of the initial review in 2008, the MCR was re-evaluating some of the cancer data for the period 2004-2006, so data for those years was not included in the review. That review of 1994-2003 data showed the following:



1. From 1994-2003, the yearly number of all cases of invasive cancer in Poolesville averaged 19 per year, ranging from a low of 11 in 1995 to a high of 32 in 1998 (Figure 5). Invasive cancer cases are defined as all invasive cancers excluding non-melanoma skin cancers and in situ bladder cancers.
2. Table 3 shows the number of invasive cancers by type of cancer diagnosed in persons living in Poolesville or in zip code 20837 (1994-2003). There were a total of 191 cases diagnosed in the 10-year period, the largest number of which was the same as the major types of cancers diagnosed in the state as a whole (female breast, prostate, lung and bronchus, and colon and rectum. MCR policies prohibit the disclosure of number of cases if the specific number is 1-5, to protect confidentiality, so tables presented in this report provide a range of '1-5' for fewer than 6 cases.
3. The pattern of cancer types and overall number of cases reported to the MCR did not appear unusual compared with the same period for Montgomery County or the state of Maryland as a whole. However, even though the evaluation did not reveal any unusual patterns, when additional cases reported to DHHS were included, questions were raised about certain types of cancer. Unfortunately, the cases reported were not initially included in the 1994-2003 MCR data, so it was not possible to either verify the cases, or to compare the total number of cases with either Montgomery County or the state as a whole.

After the initial review of the Maryland Cancer Registry (MCR) data and presentation to the community in January, 2009, DHMH requested technical assistance from the U.S. Centers for Disease Control and Prevention (CDC) in the form of an Epi-Aid request. The request was approved and an epidemiologist from the CDC Division of Cancer Control and Prevention worked with the DHMH and DHHS to provide some additional analysis of MCR data.

### **CDC Analysis of Cancer Registry Data**

The U.S. Centers for Disease Control and Prevention (CDC) was asked to assist the investigation through a mechanism known as an Epi-Aid request. The objectives of the Epi-Aid investigation were to:

- 1) Confirm and validate cancer cases reported by the community with those reported to the MCR; and
- 2) Determine whether there was an excess of cancer cases in Poolesville in comparison to cancer cases observed in Montgomery County or in the state of Maryland.

### ***Confirmation and Validation of Cancer Cases Reported in the Community***

To confirm and validate cancer cases reported by the community, a data set was created that included all cases reported to either the MCR, DHHS, or the Washington, DC Cancer Registry with a date of diagnosis from 1992-2008 and an address that listed the resident's city or town as Poolesville and/or zip code 20837. A total of 374 cases for the period were identified from the MCR, while the Washington, DC Cancer Registry identified 67 cases in the same period, and DHHS identified 8 cases that had been reported to the County. When these "additional" cases

were compared, all but 13 were either already in the MCR appropriately, or were excluded because they were not actually invasive cancers that should have been reported.

### Determination of Standardized Incidence Ratios

To determine whether the number of cases of cancer in Poolesville was higher or lower than might be expected in comparison to the number of cases in Montgomery County or the state of Maryland, standardized incidence ratios (the ratio of cases actually observed in a group, compared with the number of cases that would have been expected if the rate of cancer were the same as for a comparison group) were calculated for overall cancer and for selected specific cancers of interest.<sup>5</sup> The CDC analysis looked only at cancers reported to the MCR for the period 1992-2006.

The cancer types selected for the individual SIR analyses included:

- 1) Cancer sites kidney, bladder, and sarcoma, and
- 2) Cancer sites historically related to concern about naturally occurring radioactivity in drinking water (bladder, lung, and leukemia). These sites were based on a literature review of environmental risks, with particular attention to cancers associated with exposure to radioactivity, especially, but not exclusively, in drinking water.

International Classification of Disease for Oncology (ICD-O-3) codes for the cancers of interest are listed below:

- Kidney: C649 any histology except 9590-9989
- Bladder and in situ bladder C670-C679 (invasive, Behavior=3; in situ, Behavior=2; any histology except 9590-9989)
- Sarcoma (Selected Sarcomas of bone, joint, articular cartilage; chondrosarcoma, Ewing's sarcoma): C400-409; C410-419; C490-499;
- Lung and bronchus: C340-C349; any histology except 9590-9989
- Leukemia (all types):
  - Lymphocytic Leukemias (Chronic, Acute, Other): C420, 421, 424; Histology= 9826,9835-9837, 9823, 9820, 9832-9834, 9940
  - Myelocytic and Monocytic Leukemia (Chronic, Acute, Other): Histology= 9840, 9861, 9866, 9867, 9871-9874, 9895-9897, 9910, 9920, 9891, 9863, 9875, 9876, 9945, 9946, 9860, 9930

Other invasive cancers were defined as follows:

- Female Breast: C501-509, sex=female, any histology except 9590-9989
- Prostate: C619, any histology except 9590-9989
- Colorectal: C180-209, C260, any histology except 9590-9989

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<sup>5</sup> See Appendix 3.

Because these preliminary analyses involved a small numbers of cases, the specific findings for individual cancer types is not shown in detail to comply with MCR and DHMH reporting confidentiality and privacy policies.

In the preliminary analysis by CDC of 1992-2006 data from the MCR, there were 7 invasive bladder and 11 in situ bladder cancer cases, 11 kidney cancer cases, and 34 lung and bronchus cancer cases diagnosed and reported among Poolesville residents. The distributions for age at diagnosis were comparable to the distributions observed for the State of Maryland and for Montgomery County. Moreover, the case distributions over the investigation period from 1992 through 2009 did not show any type of concentration of diagnoses of cases within a specific period of years. Fewer than 5 cases of leukemia and fewer than 5 cases of sarcoma were found. For both leukemia and sarcoma, the cases analyzed were diagnosed randomly over the years 1992-2006, and differed with respect to ages at diagnosis- no patterns based on year of diagnosis or age were noted. Moreover, the cases of leukemia and sarcoma included both childhood and adult cancer, which are generally considered separately in analysis of cancer rates. Among the leukemia cases, the histology types were different; thereby not suggestive of a common etiology. The findings were similar with regard to the sarcomas.

**Recommendations of the CDC (Excerpted directly from the CDC Trip Report):**

“Based on our investigation, we recommend the following next steps:

1. The number and pattern of cancer cases within Poolesville are not suggestive of cancer patterns different from what is expected based on Montgomery County and Maryland cases reported since 1992. Based on the CDC systematic approach to evaluate health concerns followed in this investigation, more detailed and in-depth epidemiological evaluations such as rapid case ascertainment that encompasses a wider geographical area or additional time periods; a field investigation to better define the characteristics of the cancers of concern; or collection of additional information on the potential risk factors or exposures to explore a cancer-exposure relationship are not warranted at this time.
2. Maryland DHMH and DCCR should continue to work together to assure complete and timely interstate exchange of reportable cancer data.
3. MCR should update cases from both DCCR and self reported to Montgomery County DHHS that are not yet in the MCR. If self-reported cases need further verification, Maryland DHMH could request permission from the people who self-reported their cancer to contact his or her health provider, to provide medical records pertaining information on his/her diagnosis of cancer.
4. Maryland DHMH and Montgomery County DHHS should continue the surveillance of cancers of interest annually after case reporting for each year is complete. Specifically, this surveillance should entail a review of case data for cancer of concern and recalculations of SIRS as annual data become available up to and including the 2008 and 2009 diagnosis years.
5. Using this Epi-Aid trip report, Maryland DHMH and Montgomery County DHHS should consider jointly preparing a report that explains the CDC findings and interprets them in the context of the Poolesville community. Montgomery County DHHS has a better knowledge of the residents in Poolesville, their concerns, and the available resources to serve the community and is the best agency to determine the next steps to translate the recommendations in this report into next steps that best address the community’s concern.
6. Montgomery County DHHS, in collaboration with Maryland DHMH, should provide community education regarding the results and recommendations of this investigation, their own report, and of cancer prevention:
  - In response to community concern, Maryland DHMH and Montgomery County DHHS should share with the community of the extent of case validation completed for this investigation and the results outlined in this report and their own report (with attention to protection of confidentiality and data reporting standards). An appropriate forum to communicate the findings can be decided by Montgomery County DHHS and may include a public meeting, use of local media, letters to concerned individuals who have identified their interest to Montgomery County DHHS, and/or posting a summary on the Montgomery County Department of Health and Human Services web site.
  - DHHS and Maryland DHMH should to use this investigation and the communication of results to the community as an opportunity to increase awareness about cancer screening guidelines, promote cancer risk prevention, and to highlight local programs and services for cancer prevention and support, and encourage participation of concerned citizens in Comprehensive Cancer Control (<http://fha.maryland.gov/cancer/cancerplan/>).
  - We suggest that the community be encouraged to refer to the Frequently Asked Questions, a document already available on the Montgomery County Department of Health and Human Services web site. This useful document was written, reviewed, and submitted by Montgomery County DHHS, the MCR, the Environmental Health Coordination, and the Maryland Department of the Environment to answer the questions concerning cancer voiced during the Poolesville Town Commissioners Meeting held on January 26, 2009.”

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## Expanded Analysis of Maryland Cancer Registry Data Conducted in 2010

Following the recommendations of the CDC, DHMH and the MCR assembled a more up to date set of data from the MCR that added cases from the years 2004-2007. This larger data set encompassing 1992-2007 was then used to update the calculated standardized incidence ratios (SIRs) for overall cancer, as well as for the cancers of interest.

### For Standardized Incidence Ratios:

For SIRs, an **invasive cancer case** was defined as a tumor reportable to the MCR (see [http://fha.state.md.us/cancer/mcr\\_regs.cfm](http://fha.state.md.us/cancer/mcr_regs.cfm)) that was invasive cancer of any site or in situ bladder cancer with date of diagnosis from 1992 through 2007 and registered in the MCR as of December 1, 2009.

Cases in three areas were included in the SIRs: invasive cancer cases with

- Diagnosis City of Poolesville (any spelling) or Diagnosis Postal Zip code of 20837 but excluding any cases that upon review were not in Poolesville (e.g. Gaithersburg cases miscoded as 20837);
- Diagnosis County = Montgomery County; and
- Diagnosis State = Maryland.

All invasive cancer cases combined were included in the SIR analysis of overall cancer and in the analysis by age, gender, and specific types of cancer.

The International Classification of Disease for Oncology (ICD-O-3) codes for the cancers used for SIR calculation are listed below:

- Sarcoma (Selected Sarcomas of bone, joint, articular cartilage; chondrosarcoma, Ewing's sarcoma): C400-409; C410-419; C490-499
- Kidney: C649--C659; any histology except 9590-9989
- Bladder and in situ bladder C670-C679 (invasive, Behavior=3; in situ, Behavior=2; any histology except 9590-9989
- Lung and bronchus: C340-C349; any histology except 9590-9989
- Leukemia:
  - Lymphocytic Leukemias (Chronic, Acute, Other): [(C420, 421, 424) with Histology=9823] and [Any PSite with Histology= 9826,9835-9837, 9820, 9832-9834, 9940]
  - Myelocytic and Monocytic Leukemia (Chronic, Acute, Other): Any PSite with Histology= 9840, 9861, 9866, 9867, 9871-9874, 9895-9897, 9910, 9920, 9891, 9863, 9875, 9876, 9945, 9946, 9860, 9930
- Female breast: C50--509, female gender; any histology except codes 9590-9989
- Prostate: C619; any histology except codes 9590-9989
- Colorectal: C18.0—C20.9, C26.0; any histology except codes 9590-9989

These results, shown in Tables 5 and 6, confirmed the initial assessment that cancer in Poolesville was not significantly different from cancer rates and patterns in the rest of Montgomery County and the state of Maryland. Table 5 shows that only for residents aged 60-64 years old are the expected number of cancer cases significantly different (elevated) than Montgomery County. However, they are not significantly different when compared with Maryland as a whole.

Table 6, which summarizes observed and expected cases by type of cancer, looks specifically at the cancers of interest, as well as the most common cancers. None of the cancers was significantly different than the number expected based on Montgomery County and Maryland data. It is worth noting that the MCR generally does not calculate SIRs when the number of observed cases is less than 25, as it tends to make the estimated ratios unstable.

Some additional analysis was done to look at possible confounding variables (factors that could have hidden a possible effect). Some of these factors include:

- More recently diagnosed cancer cases (year of diagnosis 2000-2008) versus earlier diagnosed cases (year of diagnosis 1994-1999)
- Female versus male
- Potential geographic clustering of cases (using maps of individual cases)
- Race group comparisons (White, Black/African American)
- Possible differences by length of time in home (although there were no direct data on this, we used publicly available records on home sales to examine how many homes had recently changed hands, and estimated maximum time in home based on time from last recorded home sale)

The results of these analyses (not shown here because they are based on individual records) showed no consistent differences for any of the factors.

## **SUMMARY**

Two questions have been raised in Poolesville. The first is whether there is an increase in some types of cancer; the second is whether there is some environmental hazard (most notably, naturally occurring radioactivity in drinking water) and whether that hazard may be related to an increased risk of cancer.

- Based on available Maryland Cancer Registry (MCR) data through December 31, 2009, the cases of cancer diagnosed in Poolesville between 1992 and 2007 do not show a statistically significant increase when compared to the number of cancer cases expected in a population the size of Poolesville. Additionally, no unexpected pattern of cancer cases was identified.
- Additional analysis, looking at potential geographic clustering of different types of cancer, length of time in residence, or other potential confounders, did not appear to show any patterns.

- CDC recommendations regarding the need to update MCR data with additional cancer reports, and to continue to conduct periodic reviews of the cancer data, have been supported by both DHMH and DHHS.

There is ongoing debate concerning radioactivity in drinking water. Naturally occurring radiation in drinking water has been suggested as a possible source of risk of cancer. The cancers of concern include bone cancer, leukemia, lung cancer, stomach cancer, and possibly bladder or kidney cancer, depending on which radioactive material is being studied. Based on their metabolism, some radioactive materials are more likely to deposit in bone (radium), while others are more likely to be excreted through the lung and breath (radon), or kidneys and bladder (uranium).

However, human epidemiologic studies of radioactive materials in drinking water have been inconsistent in showing health effects on humans. In some cases the cancer risk associated with radioactivity in drinking water has not been seen<sup>6</sup>, while others have shown a relatively small effect<sup>7,8</sup>. Again, the particular radioactive material in question influences the risk estimate.

With respect to the concerns raised in Poolesville, a number of factors complicate the analysis of cancer and its relationship to any specific possible environmental risk factor. As most environmental risk factors, including radioactivity, cause relatively small increases in specific types of cancer, the small size of the population means it would be difficult to detect a statistically significant increase in the number of cancers from a risk factor such as radioactivity in drinking water, even if levels of radioactivity were substantially above EPA guidelines. As mentioned earlier, the number of any specific type of cancer in the Poolesville population is too small to analyze or detect trends, even aggregated over a long time period.

Second, there are other factors such as latency that would need to be considered in any analysis of possible environmental risk factors. These include the age of the population in question, other potential exposures such as smoking, how long the exposure has gone on (most environmental exposures have a latency period such that the exposure occurs years or decades before the health effect appears), and what the appropriate comparison group would be.

This is not meant to address questions related to existing or proposed guidelines or standards for radioactivity in drinking water in Poolesville. Decisions regarding drinking water standards reside with the Maryland Department of the Environment, and with the public water supply. Of note, the public water supply is in the process now of installing filtration devices intended to remove radon and uranium.

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<sup>6</sup> Kurttio P, Salonen L, Ilus T, Pekkanen J, Pukkala E, Auvinen A. Well water radioactivity and risk of cancers of the urinary organs. *Environmental Research* 2006; 102:333-338.

<sup>7</sup> Fuortes L, McNutt LA, Lynch C. Leukemia incidence and radioactivity in drinking water in 59 Iowa towns. *American Journal of Public Health* 1990; 80(10): pp. 1261 – 1262.

<sup>8</sup> Bean JA, Isacson P, Hahne RMA, Kohler J. Drinking water and cancer incidence in Iowa. *American Journal of Epidemiology* 1982; 116(6):924-932.

**Table 1. Demographic characteristics of Poolesville, 20837, Montgomery County and Maryland (2000 Census).**

General Characteristics	Poolesville (Township)		20837 (including Poolesville)		Montgomery County	Maryland
	Number	Percent	Number	Percent	Percent	Percent
Total population	5151		6045			
Male	2530	49.1	2997	49.6	47.9	48.3
Female	2621	50.9	3048	50.4	52.1	51.7
Median age (years)	35.0	(X)	36.1	(X)	36.8	36.0
Under 5 years	393	7.6	429	7.1	6.9	6.7
18 years and over	3348	65	4038	66.8	74.6	74.4
65 years and over	166	3.2	311	5.1	11.2	11.3
One race	5085	98.7	5966	98.7	96.6	98
White	4820	93.6	5528	91.4	64.8	64
Black or African American	147	2.9	303	5.0	15.1	27.9
American Indian and Alaska Native	25	0.5	25	0.4	0.3	0.3
Asian	56	1.1	61	1	11.3	4
Native Hawaiian and Other Pacific Islander	1	0	1	0	0	0
Some other race	36	0.7	36	0.7	5	1.8
Two or more races	66	1.3	79	1.3	3.4	2
Hispanic or Latino (of any race)	138	2.7	180	3	11.5	4.3
Average household size	3.22	(X)	3.09	(X)	(X)	(X)
Average family size	3.44	(X)	3.37	(X)	(X)	(X)
Total housing units	1630		2002			
Occupied housing units	1601	98.2	1953	97.6	97	92.3
Owner-occupied housing units	1447	90.4	1705	87.3	68.7	67.7
Renter-occupied housing units	154	9.6	248	12.7	31.3	32.3
Vacant housing units	29	1.8	49	2.4	3	7.7
<b>Social Characteristics</b>	<b>Number</b>	<b>Percent</b>	<b>Number</b>	<b>Percent</b>	<b>Percent</b>	<b>Percent</b>
Population 25 years and over	3064		3713			
High school graduate or higher	2916	95.2	3501	94.3	90.3	83.8
Bachelor's degree or higher	1359	44.4	1565	42.1	54.6	31.4
Civilian veterans (civilian population 18 years and over)	396	11.9	488	12.2	9.9	13.4
Disability status (population 5 years and over)	554	11.7	678	12.2	13.4	17.6
Foreign born	252	4.9	289	4.8	26.7	9.8
Male, Now married, except separated (population 15 years and over)	1247	70.8	1458	68.9	61.3	56.3
Female, Now married, except separated (population 15 years and over)	1221	66	1437	65.5	54.5	49.7
Speak a language other than English at home (population 5 years and over)	338	7.2	387	6.9	31.6	12.6
<b>Economic Characteristics</b>	<b>Number</b>	<b>Percent</b>	<b>Number</b>	<b>Percent</b>	<b>Percent</b>	<b>Percent</b>
In labor force (population 16 years and over)	2820	80.3	3301	78.5	70.7	67.8
Median household income in 1999 (dollars)	85091	(X)	82301	(X)	(X)	(X)
Median family income in 1999 (dollars)	88916	(X)	84841	(X)	(X)	(X)
Per capita income in 1999 (dollars)	30211	(X)	30577	(X)	(X)	(X)
Families below poverty level	36	2.5	60	3.6	3.7	6.1
Individuals below poverty level	135	2.6	233	3.9	5.4	8.5
<b>Housing Characteristics</b>	<b>Number</b>	<b>Percent</b>	<b>Number</b>	<b>Percent</b>	<b>Percent</b>	<b>Percent</b>
Single-family owner-occupied homes	1389		1525			
Median value (dollars)	199400	(X)	200100	(X)	(X)	(X)

\*Source: U.S. Census Bureau, American Factfinder website, <http://factfinder.census.gov>, accessed July 9, 2010.



**Table 2. Topics regarding cancer and the environment addressed in Frequently Asked Questions.**

<b>Area of Concern</b>	
<b>Health</b>	Concerns about specific types of cancer
	Concerns about the Maryland Cancer Registry and whether and how cases got into the Registry, as well as timeliness of reporting
	Types of cancer that might be linked to possible environmental exposures in the Poolesville area
	General types and frequencies of cancer in Poolesville, and whether they differ from Montgomery County and the State of Maryland
	Were there differences between who got cancer, and when the cancer occurred (age of onset), in Poolesville compared with other areas?
	How would investigators account for people who moved into the area or out of the area during the study period who might also develop cancer?
<b>Environmental Hazards and Exposures</b>	In general, what is known about environmental hazards in air, water, and the surrounding area?
	What is known of specific hazards (particularly radiological hazards) occurring in groundwater that serves as drinking water for the town?
	What control technologies are available and effective for radiologic hazards in the water supply?
	What is the status of radon in homes?
	General questions about air quality
	What about other potential environmental hazards such as airborne chemicals?
	What (if anything) should be done to reduce exposures to potential hazards now, even if it is not clear whether those hazards could be related to any potential cancer risk?

**Table 3. Drinking water contaminants of potential concern in Poolesville.**

Contaminant	Year	Well Number										Unit	MCLG	MCL
		2	3	4	5	6	7	8	9/10	11	12			
<b>Beta emitters</b>	2009	3.5	<2	2	<3	4	5.5	2	5.5	2		pCi/L	0	50
	2008	3.5	<2	2	<3	4	5.5	2	5.5	2		pCi/L	0	50
	2007	4	10	4.25	<3	4	7.6	11	6.2			pCi/L	0	50
<b>α emitters</b>	2009	3.1	5	4.5	9	10	4.1	7	8.7	2	2.4	pCi/L	0	15
	2008	7.1	5	4.5	9	10	5.7	8.9	9.4			pCi/L	0	15
	2007	7	4	6.5	9	7	0.4	8.1	7.1			pCi/L	0	15
<b>Combined radium</b>	2009	0.6	0.7	0.8	<1	1.6	1.2	1	1.3	.07	.3	pCi/L	0	5
	2008	1.2	0.3	0.5	<1	1.6	1.3	1.2	1.3			pCi/L	0	5
	2007	1.5	0.3	0.5	<2.3	1.6	1.2	0.4	1.47			pCi/L	0	5
<b>Uranium</b>	2009	2.9	3.6	11.4	4.7	14.2	23.2	5.4	12.7			µg/L	0	30
	2008	15.6	3.6	11.4	4.7	14.2	22.6	5.2	15.3			µg/L	0	30
	2007	21.9	2.4	11.5	4.7	9.5	21	38.9*	19.8			µg/L	0	30
<b>Radium 226</b>	2009											pCi/L	0	5
	2008	0.3	0.3	0.4		0.8	0.5	0.5	0.4			pCi/L	0	5
	2007	0.2	0.2	0.35		0.8	0.37	0.4	0.52			pCi/L	0	5
<b>Radium 228</b>	2009											pCi/L	0	5
	2008	0.9	<0.8	0.5		0.8	0.8	0.7	0.9			pCi/L	0	5
	2007	1.3		0.125		0.8	0.86		0.95			pCi/L	0	5
<b>Radon</b>	2009	805	967	1640	1096	1314	2875	1751	1977		273	pCi/L	N/A	N/A
	2008	395	560	2500	405	815	1280	850	1930			pCi/L	N/A	N/A
	2007	820	560	2500	405	815	1280	850	1930			pCi/L	N/A	N/A
<b>Arsenic</b>	2009						0.005					ppm	0	0.01
	2008						0.005		0.002			ppm	0	0.01
	2007								0.002			ppm	0	0.01

Source: Town of Poolesville Water Quality Reports for 2007-2008, 2008-2009, [2009-2010](#).

Table 4. Number of Invasive Cancers by Type of Cancer, 1994-2003, Poolesville, MD – Initial Review of Maryland Cancer Registry Data\*

Site/Type of Cancer	Total cases of cancer reported Diagnosis Years 1994-2003
Floor of mouth	0
Majsal gland	0
Male breast	0
Other digestive	0
Other buccal pharynx	0
Other respiratory	0
Soft tissue	0
Acute myelogenous leukemia	1-5
Bone joint	1-5
Gall bladder	1-5
In situ bladder	1-5
Liver	1-5
Multiple myeloma	1-5
Nasopharynx	1-5
Other nerve	1-5
Other skin	1-5
Other female genital	1-5
Small intestine	1-5
Testis	1-5
Acute lymphocytic leukemia	1-5
Bladder	1-5
Cervix	1-5
Larynx	1-5
Other ill defined	1-5
Other leukemia	1-5
Pancreas	1-5
Tongue	1-5
Esophagus	1-5
Stomach	1-5
Ovary	1-5
Brain	1-5
Kidney and renal	6
Thyroid	6
Non-hodgkins lymph	8
Uterine	9
Skin melanoma	12
Colon, rectum, sigmoid	17
Lung and bronchus	21
Prostate	30
Female breast	39
<b>Total</b>	<b>191</b>

\* Poolesville defined as the City at Diagnosis = Poolesville (any of several spellings) or zip code 20837

Table 5. Number of Poolesville Cases Observed and Expected and Overall Cancer Standardized Incidence Ratios (SIRs), 1992-2007.

	Observed 1992-2007	Expected ^ based on Montgomery County 1992-2007	SIR** of 20837 compared to Montgomery County	20837 Compared to Montgomery County 95% CI	Zip Code 20837 Statistically Different from Montgomery County?	Expected ^ based on Maryland 1992-2007	SIR** of 20837 compared to Maryland	20837 Compared to Maryland 95% CI	Zip Code 20837 Statistically Different from Maryland?
	<u>n</u>	<u>n</u>				<u>n</u>	<u>n</u>		
<b>ALL CANCER CASES</b>	<b>319</b>	284	1.12	(1.00 - 1.25)	No	314	1.02	(0.91 - 1.13)	No
<b>CANCER CASES BY AGE GROUP</b>									
0-19 Yrs	8	4	2.0	(0.82 - 3.84)	No	5	1.6	(0.66 - 3.08)	No
20-49 Yrs	73	74	0.99	(0.77 - 1.24)	No	78	0.94	(0.73 - 1.17)	No
50-54 yrs	38	39	0.97	(0.68 - 1.33)	No	43	0.88	(0.62 - 1.20)	No
55-59 yrs	45	35	1.29	(0.93 - 1.71)	No	42	1.07	(0.78 - 1.43)	No
<b>60-64 yrs</b>	39	26	1.50	(1.06 - 2.04)	<b>Yes</b>	30	1.3	(0.92 - 1.77)	No
65-69 yrs	33	24	1.38	(0.94 - 1.92)	No	27	1.22	(0.83 - 1.70)	No
70+ Yrs	83	81	1.02	(0.81 - 1.27)	No	88	0.94	(0.75 - 1.17)	No
<b>CANCER CASES BY GENDER</b>									
FEMALE	166	146	1.14	(0.97 - 1.32)	No	152	1.09	(0.93 - 1.27)	No
MALE	152	138	1.10	(0.93 - 1.30)	No	162	0.94	(0.79 - 1.10)	No

- \* indicates 1-5 cases
- \*\* Standard Incidence Ratio = Observed Cases/ Expected Cases
- ^ Expected cases = (1992-2007 Montgomery or Maryland state cancer incidence rates) x (population of Poolesville, MD), derived from consolidated data as of 12/1/2009.
- ^^ 95% CI Interpretation: Only intervals that do NOT include 1.00 within its range are statistically significant differences.

Table 6. Number of Poolesville Cases Observed and Expected and Cancer Specific Sites Standardized Incidence Ratios (SIRs), 1992-2007.

	Observed 1992-2007	Expected <sup>^</sup> based on Montgomery County 1992-2007	SIR** of 20837 compared to Montgomery County	20837 Compared to Montgomery County 95% CI	Zip Code 20837 Statistically Different from Montgomery County?^^	Expected <sup>^</sup> based on Maryland 1992-2007	SIR** of 20837 compared to Maryland	20837 Compared to Maryland 95% CI	Zip Code 20837 Statistically Different from Maryland?
	<u>n</u>	<u>n</u>				<u>n</u>	<u>n</u>		
<b>KIDNEY</b>	<b>9</b>	7	1.37	(0.60 -2.55)	No	8	1.06	(0.47 - 1.97)	No
<b>KIDNEY+ BLADDER</b>	<b>13</b>	17	0.79	(0.41 - 1.32)	No	20	0.66	(0.34 - 1.11)	No
<b>LEUKEMIAS</b>									
LYMPHOCYTIC LEUKEMIA	*	3	1.97	(0.59 - 4.43)	No	*	1.78	(0.53 – 4.02)	No
MYELOCYTIC or MONOCYTIC LEUKEMIA	*	3	0.35	---	---	*	0.33	(0.00 – 1.65)	No
<b>LUNG+ BRONCHUS</b>	<b>35</b>	26	1.36	(0.94 – 1.88)	No	41	0.85	(0.59 - 1.18)	No
<b>SARCOMA</b>	*	3	1.29	(0.31 – 3.16)	No	*	1.29	(0.31 – 3.17)	No
<b>FEMALE BREAST</b>	<b>64</b>	57	1.12	(0.86 – 1.43)	No	53	1.20	(0.92 – 1.52)	No
<b>PROSTATE</b>	<b>48</b>	47	1.02	(0.75 – 1.34)	No	48	1.00	(0.73 – 1.32)	No
<b>COLORECTAL</b>	<b>32</b>	25	1.27	(0.86 – 1.77)	No	31	1.02	(0.69 – 1.43)	No

- \* indicates 1-5 observed cases
- \*\* Standard Incidence Ratio = Observed Cases/ Expected Cases
- ^ Expected cases = (1992-2007 Montgomery or Maryland state cancer incidence rates) x (population of Poolesville, MD), derived from consolidated data as of 12/1/2009.
- ^^ 95% CI Interpretation: Only intervals that do NOT include 1.00 within its range are statistically significant differences.

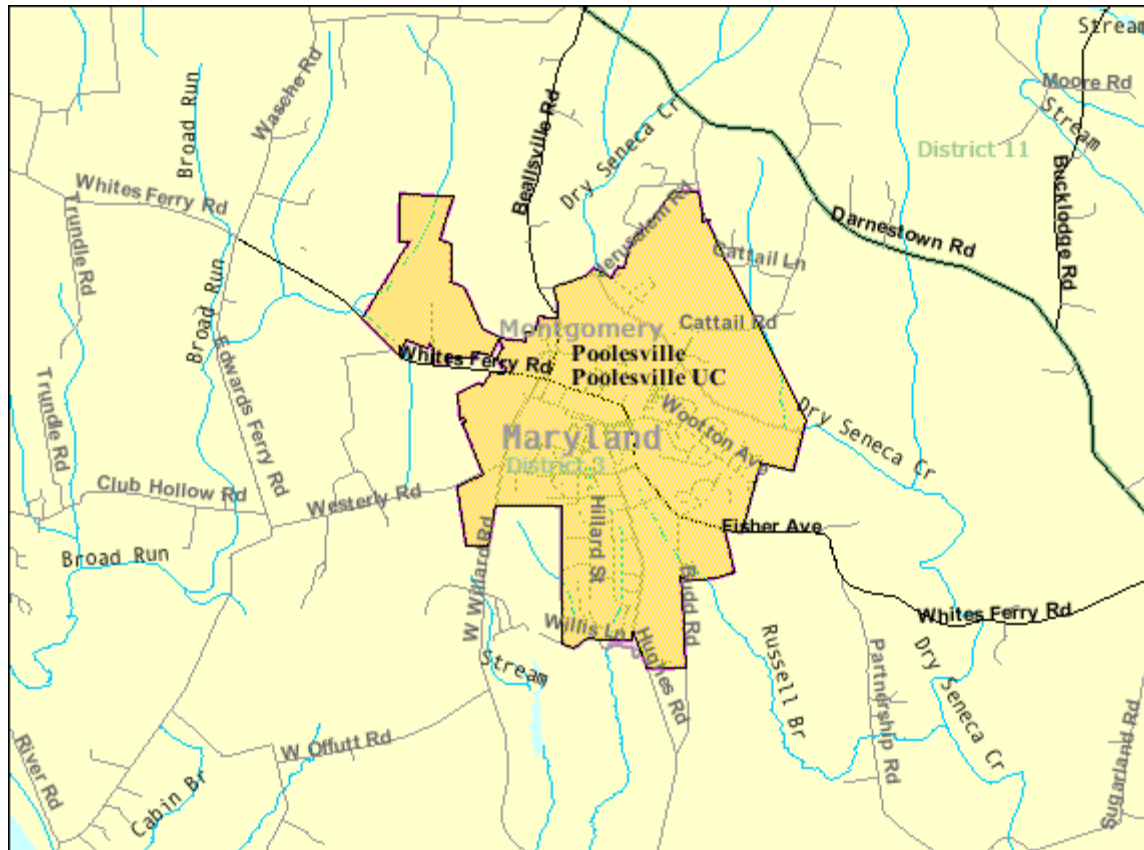


Figure 1. Boundaries of Poolesville, Maryland (Source: U.S. Census Bureau, Fact Sheet for Poolesville, Accessed at [http://factfinder.census.gov/servlet/MapItDrawServlet?geo\\_id=16000US2462850& bucket\\_id=50&tree\\_id=420&context=saff& lang=en& sse=on](http://factfinder.census.gov/servlet/MapItDrawServlet?geo_id=16000US2462850& bucket_id=50&tree_id=420&context=saff& lang=en& sse=on) on December 21, 2008).

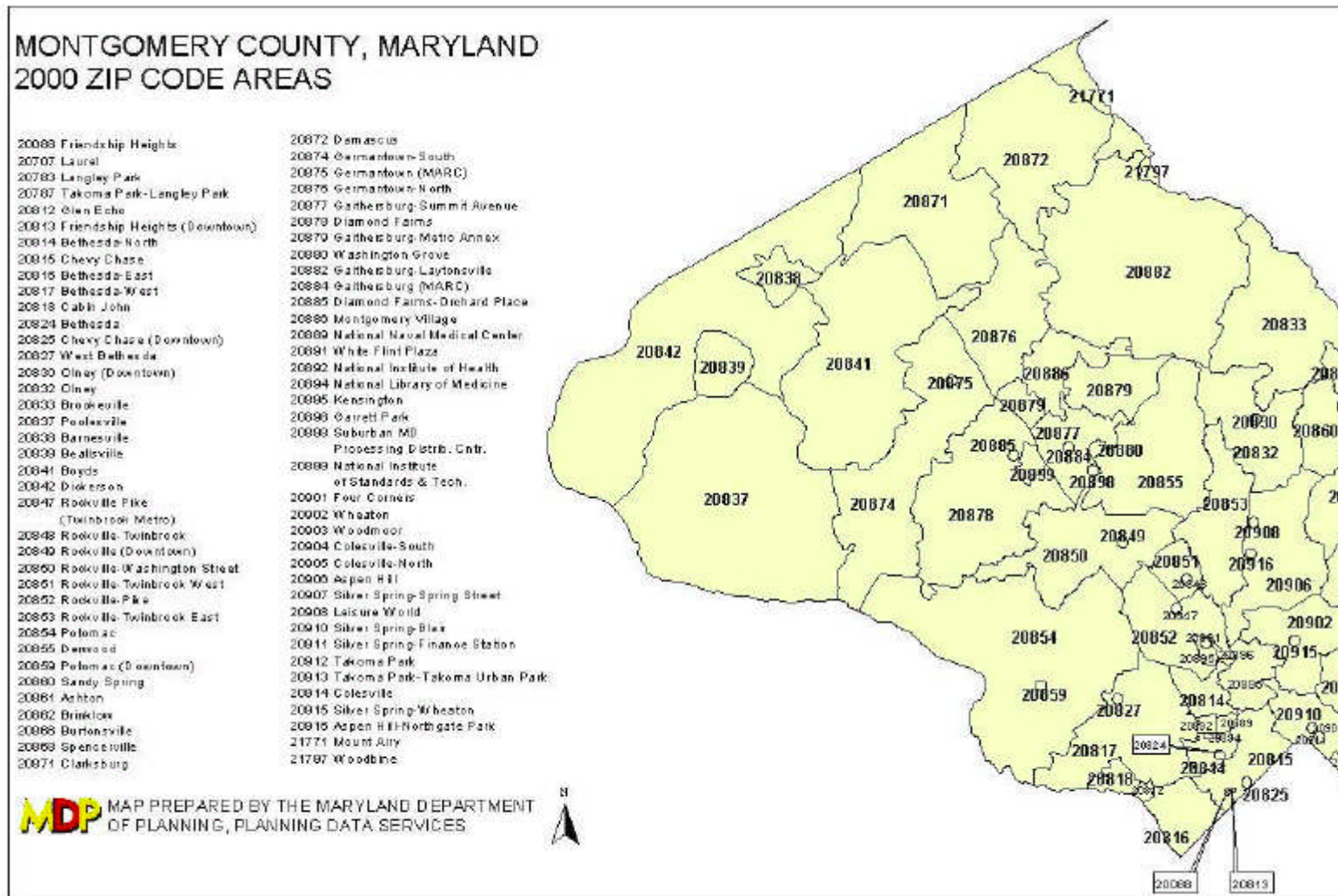


Figure 2. Zip Code 20837 (Poolesville), Source = Maryland Department of Planning, accessed [http://www.mdp.state.md.us/MSDC/zipcode\\_map/2000/montzc00.jpg](http://www.mdp.state.md.us/MSDC/zipcode_map/2000/montzc00.jpg), December 21, 2008.



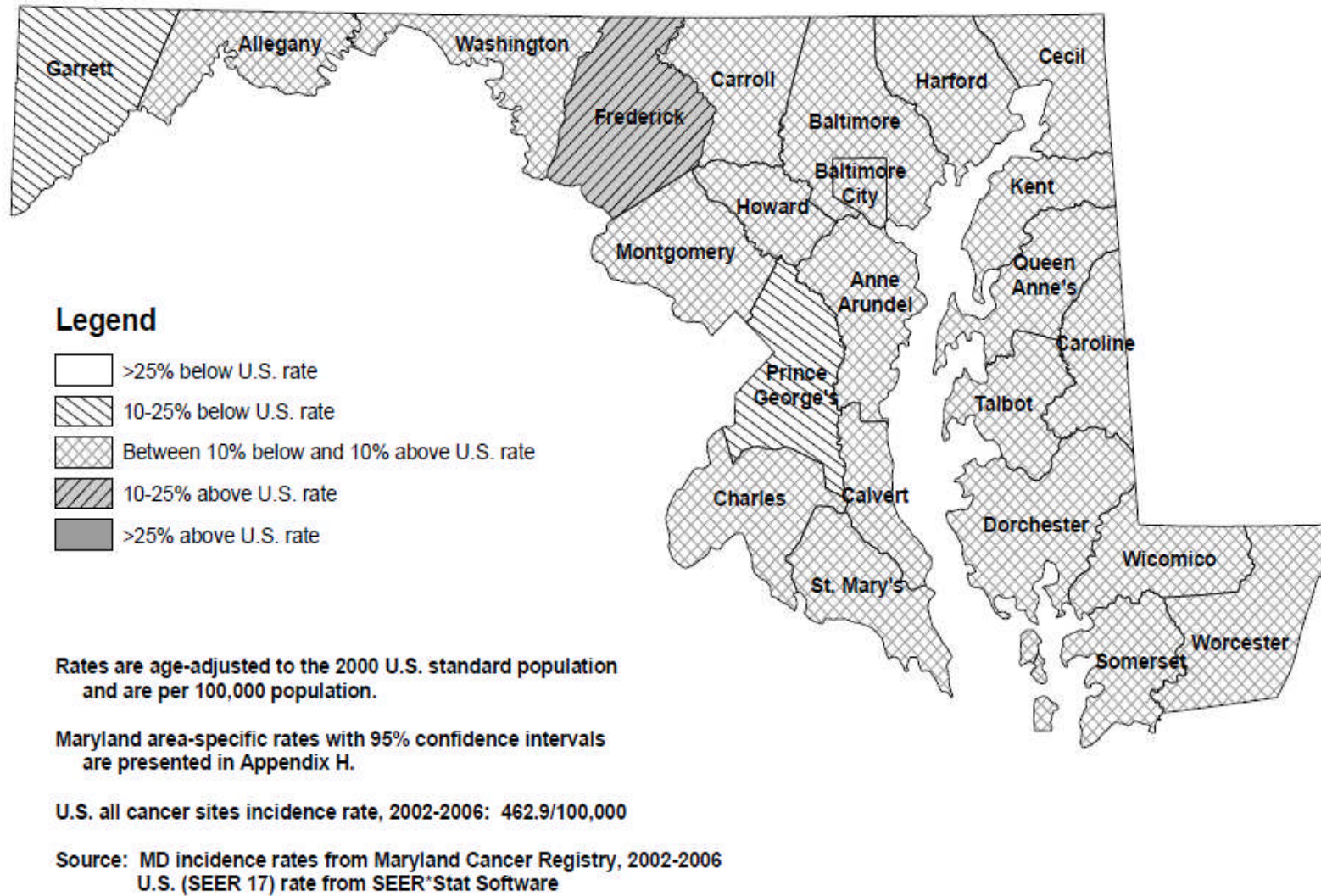


Figure 3. Age-adjusted rates for all cancer incidence, by county, 2002-2006. Source: Maryland Cigarette Restitution Fund Program. Cancer Report 2009, p. 24.



**Number of Invasive Cancer Cases in Diagnosis City = Poolesville as of 10/31/2008**

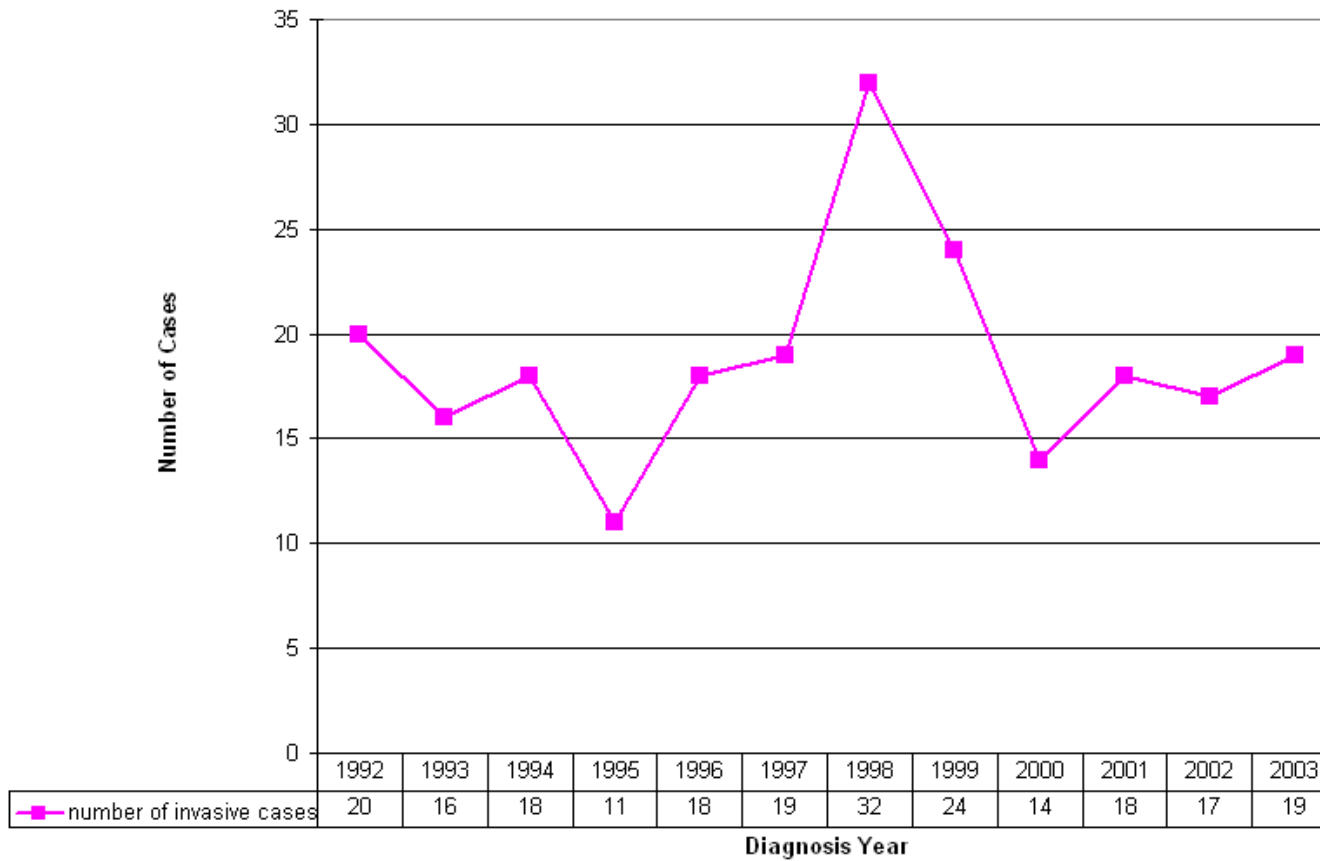


Figure 4. Number of cancer cases (all causes) by year for Poolesville, 1992-2003 (all cases where city of diagnosis="Poolesville" or a variant spelling).

## APPENDIX 1

# Request to U.S. Centers for Disease Control and Prevention for Assistance (Epi-Aid)



MARYLAND DEPARTMENT OF HEALTH AND MENTAL HYGIENE  
John M. Colmers, Secretary

COMMUNITY HEALTH ADMINISTRATION  
Peter A. Sybinsky, Ph.D., Director  
Richard W. Stringer, Deputy Director

January 28, 2009

Jacqueline Miller, MD  
CDR, U.S. Public Health Service  
Division of Cancer Control and Prevention  
Centers for Disease Control and Prevention  
4770 Buford Hwy, N.E., Mailstop K-55  
Atlanta, GA 30341

Dear Dr. Miller:

I write to officially request assistance from CDC, in the form of an Epi-AID, with an assessment of cancer cases in Poolesville, a small community in Montgomery County, Maryland.

As we have discussed, based on preliminary concerns raised by residents of the Poolesville and the area on several recent cancer cases, the Maryland Department of Health and Mental Hygiene (DHMH) looked at Maryland Cancer Registry (MCR) data to try to identify unusual patterns of cancers. Although preliminary evaluation of MCR data did not identify such unusual patterns, additional information provided by community members suggest the need for further investigation into Poolesville area cancer reports to help more fully identify and characterize the types of cancers that have occurred. We seek your assistance with these activities, with evaluating the need for exposure and risk factor characterization, and if indicated, with performing such characterizations. We are happy to work with you to refine these investigation goals as more information becomes available.

We are also happy to provide whatever logistic and administrative support is needed for any Epi-Aid team that comes to Maryland to assist with this investigation. Dr. Rakhee Palekar, our EIS Officer, is aware of this request, but because of her current involvement in other activities, she is not able to serve as the lead for such an Epi-Aid.

Thank you for your consideration of this request. Please let me know if you need additional information.

Sincerely,

David Blythe, MD, MPH  
State Epidemiologist

cc: Rakhee Palekar, MD, MPH, EIS Officer, DHMH  
Clifford S. Mitchell, MS, MD, MPH, Director, Environmental Health Coordination  
Doug Hamilton, MD, MPH, Director, EIS Program

410-767-6742 ☎ Fax 410-333-5995  
Toll Free 1-877-4MD-DHMH ☎ TYY for Disabled - Maryland Relay Service 1-800-735-2258  
Web Site: [www.dhmh.state.md.us](http://www.dhmh.state.md.us)

## APPENDIX 2

### Frequently Asked Questions Posted in Poolesville

Thank you to all that submitted questions during the Poolesville Town Commissioners Meeting on Monday January 26, 2009. Montgomery County Department of Health and Human Services, Maryland Department of Health and Mental Hygiene (Maryland Cancer Registry and Environmental Health Coordination), and the Maryland Department of the Environment have reviewed the questions submitted and offer responses below. There are few more questions for which responses were not ready at time of release- updates will be provided shortly.

**Questions/responses are organized into 8 areas:**

- A. Cancer**
- B. Cancer Study**
- C. Interim Actions**
- D. Water**
- E. Ground/Soil**
- F. Radon**
- G. Air Quality**
- H. Potential Carcinogenic Materials**

After reviewing the questions and responses below, if you have additional questions, please contact the Montgomery County Department of Health and Human Services at 240-777-1245 or [PoolesvilleCancerConcerns@MontgomeryCountyMD.gov](mailto:PoolesvilleCancerConcerns@MontgomeryCountyMD.gov).

## **A. Cancer**

### **1. As a cancer survivor how can I assist?**

Specific to the work being done to evaluate the cancer concerns in Poolesville, in most cases you won't have to do anything. If you, as a cancer survivor, are approached and asked to answer some questions by the team evaluating the reports from Poolesville, you can assist by answering questions.

The Maryland Cancer Registry (MCR) of the Maryland Department of Health and Mental Hygiene has basic information on all reportable tumors in Maryland. (Basal and squamous cell cancers of the skin are not reportable to the Registry (see MCR pamphlet)).

If you were diagnosed recently, the information may not have been reported yet. In that case, you can contact the Montgomery County Department of Health and Human Services at 240-777-1245 to provide the information.

There are activities in your community to support others who are affected by cancer, and a number of worthwhile organizations that can use your help. A few are provided below:

- The American Cancer Society, 1-800-ACS-2345,  
<http://www.cancer.org/>

- National Coalition for Cancer Survivorship, 1-888-650-9127, <http://www.canceradvocacy.org>
- Susan G Komen for the Cure, 1-877 GO KOMEN, <http://ww5.komen.org/>
- Candlelighters, 301-962-3520, [www.candlelighters.org](http://www.candlelighters.org)
- American Lung Association in Maryland, 1-800-LUNG-USA, <http://www.marylandlung.org/>
- The National Cancer Institute, 1-800-4-CANCER, [www.cancer.gov](http://www.cancer.gov)

**2. We [Poolesville] have a very active American Cancer Society Relay for Life committee. Can we help? Do you work with agencies like ACS, NCC, NIH?**

A2. Yes. The Poolesville American Cancer Society (ACS) Relay for Life is in a strong position to link people to the resources they need, like the ACS and other agencies that focus on cancer.

The investigation of cancer in Poolesville will include communication with the Poolesville community, and we will certainly work with local organizations to assure that the community is well informed. If there are other aspects of the investigation that could be assisted by these organizations, we would be anxious to enlist their assistance, consistent with their own missions and policies.

The Maryland Cancer Registry, through the State-based cancer registries, collects, confirms, manages and analyzes data about cancer cases and cancer deaths. Reporting to the Registry is governed by State law and can only occur through health care providers and entities. In order to protect your privacy, information about small number of cases is not released to any organization, unless approvals have been obtained to conduct in depth analysis, investigation and specific collaboration.

Montgomery County Department of Health and Human Services refers residents to these agencies as well as others. There are many organizations that play a critical role in the lives of all who have been affected by cancer. Some are listed above in A1. above. Agencies like the American Cancer Society, National Coalition for Cancer Survivorship (NCCS), and the National Institutes for Health (NIH) all provide critical functions – to provide information and resources to assist many of us learn about cancer, how cancer can be prevented, how cancer can be treated, where to find support, to learn about cancer research, as well as to support efforts by raising money to fund these critical activities.

**3. How can I verify that my cancer case is being included?**

A3. The Maryland Cancer Registry (MCR) of the Maryland Department of Health and Mental Hygiene has basic information on all reportable tumors in Maryland. (Basal and squamous cell cancers of the skin are not reportable to the Registry (see MCR pamphlet)).

Because of confidentiality law and regulations, you cannot verify through the Maryland Cancer Registry that your cancer case has been reported and included. If you were diagnosed recently, the information about your tumor may not have been reported yet. If you are concerned that your cancer has not been reported, you may give the Montgomery County Department of Health and Human Services information about your case (name, date of birth, date of diagnosis, type of cancer, address, etc.) by calling 240-777-1245, and we will get back to you if additional information is needed.

**4. Why is the cancer registry so far behind in posting data? The update ahead will still be 2 years out of date? Perhaps new well lines have come online since?**

- A4. Cancer registration in the US is finalized in each state two years after the end of the diagnosis year. For example, each state has recently finalized and submitted its cases diagnosed through 2006. This delay allows all of the data to be reported and evaluated before the year's data are finalized. Maryland will soon be able to have case information up through 2006 Diagnosis Year.

The Maryland Cancer Registry had data problems for 2004-2005 leading to delays in releasing these data. 2004-2005 cases are now ready to be released along with the 2006 cases.

**5. What is the cycle of years that takes place before the cancer registry information is reported? Annual? Biannual?**

- A5. Hospitals, laboratories, radiation facilities, and physicians report cancer and benign central nervous system tumor data quarterly to the Maryland Cancer Registry. They have 6 months from the date of diagnosis to report a case. Once received, the reports that come in from various sources are "consolidated" into one tumor report.

The MCR reports the data annually; data are available through 2003 as of February 17, 2009. The data from 2004-2006 will soon be available. Information on tumor reporting requirements in Maryland can be found at [http://www.fha.state.md.us/cancer/mcr\\_home.cfm](http://www.fha.state.md.us/cancer/mcr_home.cfm). Reports on Cancer in Maryland can be found at [http://www.fha.state.md.us/cancer/surv\\_data-reports.cfm](http://www.fha.state.md.us/cancer/surv_data-reports.cfm).

**6. What are the numbers of the types of cancer prompting additional CDC review? What prompted the additional review if initial study/results were "within normal county and state" levels?**

- A6. We cannot identify the exact number of cases of cancers of different types, because of the small numbers involved- it could disclose the identity of individuals. The County, State, and Federal health agencies are all prohibited by law from disclosing the identity of these individuals or their medical information.

While respecting the privacy of residents and confidentiality of personal information, we can share aspects of the analysis. When we compared the number of cancers of all types seen in Poolesville during the years 1994-2003 with the number that would have been expected if Poolesville had the same cancer rates as Montgomery County or Maryland overall (adjusted for the age of the population), we did not observe a difference, that is, the number of cancer cases experienced in Poolesville were comparable to rates of cancer observed in the County and Maryland overall.

However, the Montgomery County Department of Health and Human Services received reports of some cancers that were diagnosed after 2003. We determined that the more recently reported cases should be evaluated in more detail to determine 1) whether they are similar, and 2) if they are similar, whether or not the number of cases is within the expected range of cancer cases that would be seen in a community the size of Poolesville.

## **7. What types of cancers are connected to water pollutants?**

A7. In order to measure the association between cancer types and water contaminants it is extremely important to define the type of contaminant we are referring to. Among the categories of chemicals that have been linked to cancer are: certain organic solvents; arsenic compounds; by-products of disinfection; nitrates; asbestiform particles; and radionuclides. These different materials have also been linked to different types of cancer, ranging from leukemias and lymphomas, to cancers of the gastro-intestinal tract; to lung cancer; and other types.

## **8. How many different types of cancers are there in Poolesville?**

A8. The Federal Surveillance, Epidemiology, and End Results (SEER) program divides all cancer types into 22 site groups for their data analysis profiles (<http://statecancerprofiles.cancer.gov/>). Each of these 22 sites can be further divided into specific types of cancer at that site (for example, adenocarcinoma of the lung and squamous cell carcinoma of the lung with different behaviors and treatments).

The types of cancer in Poolesville are similar to the types of cancer diagnosed in Maryland. These include common cancers such as lung, breast, colon, ovarian, prostate cancer, and melanoma. It also includes less common cancers such as the leukemias and lymphomas. Most of the cancers represented in the Maryland Cancer Registry have been observed in Poolesville at one time or another. Our investigation will look at the types, subtypes, age of onset to determine whether there is an overall increase or an increase of a specific type of cancer.

**9. Are the cancer patients broken down by men vs. women, children vs. adults, whether the patients lived in Poolesville their whole lives or not?**

A9. Yes, Maryland Cancer Registry data are examined to look at patterns in gender, location, and age. The investigation will be gathering more detailed information on people with certain types of cancer, including length of residence in Poolesville, to better understand whether these cancers could potentially be similar.

**10. Who is the point of contact to notify us when the 2004-2006 [Maryland Cancer Registry] data are available? Will the data be posted on the web? Will there be continuity in reporting the research?**

A10. Montgomery County Department of Health and Human Services will be the primary point of contact for information related to the investigation. We are also coordinating with the Town of Poolesville to provide information like these responses to your questions on the town website. The 2004-2006 data will not be posted to the Web until they are finalized later in 2009. However, the investigation will have these data available for its use to compare Poolesville to Montgomery County and Maryland.

We will continue to disseminate information consistent with privacy and other concerns, and it will be communicated directly to the community as agreed to by the Town of Poolesville and Montgomery County Department of Health and Human Services.

**11. What is the source of cancer pattern- water, airborne, contact, etc.?**

A11. The purpose of this investigation is to help answer whether there seems to be something unusual about the pattern of cancer in Poolesville. Once the answer to that first question is clearer, it may be possible to look at the pattern of cancer and suggest possible contributing factors. However, the current investigation will not be able to say much about possible contributing factors such as family history, occupational history, diet, indoor and outdoor air pollution, other pollution, or other possible factors.

Usually, cancers linked to a specific source of causes are associated to one type of cancer, not many different types of cancers. Historically, links to cancer and the environment have occurred when a specific type of cancer is seen in significant numbers in one community or within one occupation. In a small community, unless the number of particular cancers is much higher than the number of expected cases, it is difficult to assess the association between environmental pollutants and cancer. A good example is the disaster of Chernobyl, when hundreds of thousands of people were exposed to radiation and years later scientists were able to establish that the exposure caused a significant increase in thyroid cancer among children.



**12. How does the Poolesville cancer cluster compare: a) nationally; b) to areas with similar geology with groundwater sources; c) areas with similar air quality contaminants?**

A12. We do not yet know what the investigation of cancer in Poolesville will show, until we have been able to look at newer data and the other information we are going to be collecting. Once we have looked at cancer in Poolesville with the most detailed and complete information we can, it will be possible to give a more complete picture of cancer.

While the goal of the investigation is to allow Poolesville residents to understand more about cancer in their community, and we will look at comparisons with the state as a whole and with Montgomery County, it may be difficult to compare the results with other small communities around the country, since most small communities do not have cancer statistics available.

**13. While waiting for the results to be more available, what sources of public information are available now to the public interested in pursuing more in-depth self analysis?**

A13. There are many sources of information on cancer, including the [American Cancer Society \(www.cancer.org\)](http://www.cancer.org) and the [Maryland Center for Cancer Surveillance and Control](http://www.mdcancer.org) in the Department of Health and Mental Hygiene. The [Centers for Disease Control and Prevention \(www.cdc.gov\)](http://www.cdc.gov), and the [National Institutes of Health \(www.nih.gov\)](http://www.nih.gov) also have considerable resources devoted to cancer information. Addresses and phone numbers for these organizations are also included in the "[Questions and Answers about Cancer Clusters](#)" brochure prepared by the Maryland Department of Health and Mental Hygiene<sup>9</sup>. Requests for copies of the brochure can also be directed to:

***Questions and Answers about Cancer Clusters***

Public Health Services, 7<sup>th</sup> Floor  
Department of Health and Human Services  
Montgomery County  
401 Hungerford Drive  
Rockville MD 20850

Or E-mail: [PoolesvilleCancerConcerns@MontgomeryCountyMD.gov](mailto:PoolesvilleCancerConcerns@MontgomeryCountyMD.gov)

**14. Will you concentrate on other illnesses? Will it be done by age and gender?**

A14. This investigation is only looking at cancer. It will look at cancer cases by factors like age, gender, and length of residence in the community, as part of understanding whether the patterns of cancer are unusual.

## B. Cancer Study

<sup>9</sup> [http://www.fha.state.md.us/pdf/cancer/mcr\\_combined\\_cancer\\_cluster.pdf](http://www.fha.state.md.us/pdf/cancer/mcr_combined_cancer_cluster.pdf)

**Q1. Please make sure that all of the steps in this process as well as the results are communicated regularly so that Poolesville residents are kept informed along the way and not just at the beginning and end of this evaluation.**

A1. Communication is a very important part of this entire process. The Montgomery County Department of Health and Human Services and the Department of Health and Mental Hygiene are committed to providing regular updates on the progress of the investigation to the people of Poolesville. In addition, it is very important to the process that Poolesville residents feel confident they can both ask questions and make suggestions to the investigators.

**Q2. How long will the investigation take (timeline)?**

A2. It is not possible to say with certainty how long the process will take, because sometimes new information will require additional investigation. The Montgomery County Department of Health and Human Services and the Department of Health and Mental Hygiene have committed to coming back to Poolesville within 6 months to report on progress.

**Q3. As a cancer survivor, how can I become part of the study?**

A3. See the answer to Cancer Q1. and Q4., above.

**Q4. Will unusual cancers be addressed in your data so I will learn if other people have my type of cancer?**

A4. Cancers may be unusual because they don't occur very often (for example, an unusual type of cancer), or because they occur in people who don't usually get them (for example, in people who are younger than is typical). In either case the investigation will examine certain of these cancers, to see whether there is any potential pattern.

While the study will evaluate unusual cancers, we may not be able to release the exact number of cases of cancers or specific types or subtypes, because of the small numbers involved- it could disclose the identity of the individuals. The County, State, and Federal health agencies are all prohibited by law from disclosing the identity of these individuals or their medical information.

**Q5. How will you get information on people who have left the state but developed cancer soon after?**

A5. In general, it is not possible to track people who have left the area but developed cancer soon after. There is no easy way to do this. If they were known to the community, they could be directed to the Montgomery County Department of Health and Human Services (see Cancer, Q4., above).

**Q6. How can someone volunteer to assist or participate in the study?**

A6. See the answer to Cancer Q1., above.

**Q7. Using real estate records (how long people lived here), would it be possible to simply take the data map and compare it to incidents of cancer? In other records, is there a problem in Poolesville and if so, of what magnitude?**

A7. Although all of the steps are not yet identified, mapping may be a part of the strategy used to look at cancer incidents over time. However, there are other techniques that will also be used to get a more complete picture of cancer in Poolesville.

**Q8. I know of very rare cancers in town. Will analysis break down types of cancers here and especially if rare types are here?**

A8. Yes.

**Q9. If this study doesn't show a pattern, will you continue to look at the numbers? Yearly?**

A9. The purpose of this investigation is to determine whether there is something unusual about cancer in Poolesville, compared with Montgomery County and the State as a whole. If this study does not show an unusual pattern or increased number or rate of cancers, we may decide to extend surveillance to an annual review of the area cancer cases. We will determine this after we review our findings, and after discussion with the Town of Poolesville.

## C. Interim Actions

**Q1. As a precautionary measure, should we change our lifestyle (drink bottled water, etc.)?**

A1. At this point, the investigation is focused on understanding cancer in Poolesville. Certainly, it is important to look at lifestyle and other factors that can affect individual cancer risk and to make those changes that could lower the risk of cancer, including diet, exercise, smoking cessation, appropriate cancer screening, and environmental measures such as home radon testing. However, it is too soon in the investigation to draw any conclusions regarding recommendations or findings from the investigation.

Currently, there is no drinking water quality data that indicates the need to change your drinking water practices. Drinking water, including bottled water, that meets all existing regulatory standard could potentially have a small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. EPA/CDC guidelines on appropriate means to lessen the risk of contaminants are available from the Safe Drinking Water Hotline (800-426-4791).

**Q2. What should we do in the meantime?**

A2. Based on the current drinking water data, your water is safe and no action is required at this time. Should there be a change in the drinking water quality, the public will be notified promptly.

**Q3. As a parent, should we look for any symptoms? If so, what symptoms would be early indicators?**

A3. At this point in time, the most appropriate thing to do is routine and recommended well child care for your child. Because we don't even know if there is a particular problem with cancer in Poolesville, there is nothing special to recommend now regarding any other health-related activity. As noted above, it is important to reinforce all of the general health and safety practices that are appropriate for your children's age. In some cases this includes practices that will reduce cancer risk, such as tobacco prevention or appropriate sun protection.

## **D. Water**

**1. How is the water?**

A1. Based on the current drinking water data collected through various samples and continuous monitoring, the drinking water is meeting the federal and State drinking water standards.

**2. Is radon removable by filtration efforts?**

A2. Radon in drinking water is removed by aeration or activated carbon. Since, Radon is not currently regulated in drinking water; the current drinking water treatment practices that are used by Poolesville do not remove Radon from the drinking water.

Radon is commonly found in well water throughout Maryland. Out of the current 485 community water systems in Maryland, 119 systems have radon levels above 300 pci/l. The risk from Radon in drinking water is significantly less than the risk from Radon in indoor air. This is because most of the radon we breathe comes from soil under the house.

**3. Have the water distribution systems been tested on streets where incidents of cancer have been reported?**

A3. Under the current federal and State regulations, water systems are required to test for bacteria, disinfection byproducts, lead and copper in their distribution system. All other chemical standards are analyzed from samples collected at the water treatment plant. The reason for selecting different sample locations is to monitor the potential for water quality change. Bacteriological samples in the distribution system verify that the water quality remains safe. Disinfection byproduct levels are of concern for the larger water systems that use surface

water as their source. Lead and copper samples indicate whether the drinking water is corrosive, which could dissolve lead and copper from interior home plumbing and fixtures.

**4. Monocacy Elementary School in Barnesville does not allow anyone to drink water from their supply. Is the Barnesville water supply hydrogeologically connected to Poolesville water supply?**

A4. Barnesville is not hydrogeologically connected to the Poolesville water supply. The wells for Monocacy Elementary School are in the Ijamsville Formation. Poolesville wells are in the New Oxford Formation.

Monocacy Elementary School has voluntarily provided bottled water to the staff and students since the mid-1990s. In 1995, the school exceeded the action level for lead and copper, and corrosion control treatment was installed. In the 1990s, the drinking water also had increasing levels of nitrates, but there was no violation. The school has installed ion exchange treatment to remove the nitrates. The bottled water is provided at the school's discretion, and not because of an exceedence of maximum contaminant levels.

**5. Will the environmental report show all the water pollutants?**

A5. EPA has established a list of compounds that are likely to occur in drinking water, and are known to have adverse health effects. Public water systems in Maryland are tested for all these compounds (over 100) that could impact on the quality of water.

## **E. Ground/Soil**

**1. It would seem prudent to do a soil analysis in the couple of clusters that a majority of the cancers have occurred.**

a. The current investigation is looking primarily at whether the pattern of cancer in Poolesville is unusual. It is not looking at environmental quality factors in Poolesville.

**2. Is the soil contaminated?**

A2. See preceding answer.

## **F. Radon**

**Q1. What about radon testing?**

A1. Call the Radon Hotline (1-800-SOS-RADON): The Radon Hotline can send you free publications about radon in indoor air, including: "A Citizen's Guide to Radon," "The Home Buyer's and Seller's Guide to Radon," and the "Consumer's Guide to Radon," which provide information on how you can test for radon levels in your indoor air and how indoor air radon problems can be fixed. Or, visit EPA's web site on radon at <http://www.epa.gov/iaq/radon/> for more information.

**Q2. Is it true that radon exposure can occur via gases (i.e. via steam in the shower?)**

A2. Breathing radon in indoor air can cause lung cancer. Radon gas decays into radioactive particles that can get trapped in your lungs when you breathe it. As they break down further, these particles release small bursts of energy. This can damage lung tissue and increase your chances of developing lung cancer over the course of your lifetime. People who smoke have an even greater risk.

The primary source of Radon is the soil surrounding homes. It is recommended that all homes be tested for Radon levels in the air.

Radon can also be released from water during showering. Ventilation in place to remove the moisture from the bathroom will also help to remove radon if it is present.

## **G. Air Quality**

**Q1. What about the air quality?**

A1. The U.S. Environmental Protection Agency (EPA) has established National Ambient Air Quality Standards (NAAQS) for six criteria pollutants: (1) sulfur dioxide, (2) particulate matter, (3) carbon monoxide, (4) nitrogen dioxide, (5) ozone, and (6) lead. The purpose of NAAQS, as stated in the Clean Air Act, is to protect public health with an adequate margin of safety. More specifically, the primary standards were established to protect public health, and the secondary standards were developed to protect against non-health effects such as damage to property and vegetation.

The Department operates an air-monitoring network throughout the State in accordance with EPA guidelines to measure the concentrations of the criteria pollutants in the ambient air. These measurements have been used to project statewide ambient air quality and have indicated that all of Montgomery County meets the ambient air quality standards for sulfur dioxide, particulate matter (PM) (except PM<sub>2.5</sub>), carbon monoxide, nitrogen dioxide, and lead.

Although the Department has made substantial progress towards meeting the federal standards, ground level ozone and PM<sub>2.5</sub> continue to present a problem for the entire Washington D.C. metropolitan area (including Montgomery County). Thus, Montgomery County is officially classified as a nonattainment area for both ozone and PM<sub>2.5</sub>. As a consequence, under Maryland regulations, any new or modified source that has the potential to discharge significant emissions of a non-attainment pollutant in an area designated as non-attainment is required to install best available control measures to mitigate emissions. In addition, a new or modified source is required to obtain emission reductions from another source so as not to exacerbate regional air quality. By requiring emission offsets from other sources to be at least as great as the projected emissions from the new source, the air shed would theoretically show a net improvement in regional air quality.

## **H. Potential Carcinogenic Materials**

### **Q1. What about the Dickerson Plant?**

A1. The Dickerson power plant has operated in compliance with all applicable federal and State emission standards since 1997. The last NOV for exceeding an emission standard was issued in 1996.

The Maryland Department of the Environment (MDE) has also reviewed its records for the Montgomery County Resource Recovery Facility and has determined that MDE has not issued any "Air Quality" Notices of Violation (NOVs) since the initial installation date of May 1995.

### **Q2. Is there any other environmental issue that is a factor?**

A2. There are many environmental factors in any community that could contribute to health concerns. As noted above, the first phase of the investigation is looking specifically at whether there is something unusual about cancer in Poolesville. Until there is some answer to that question, it is difficult to speculate about possible environmental factors. Investigators will discuss environmental issues with the Montgomery County Department of Environmental Protection and the Maryland Department of the Environment, in order to have a better understanding of all of these issues as the investigation continues.

### **Q3. Poolesville is in close proximity to an incinerator (owned by a company that is known to be non-compliant with regulatory standards), a facility that handles radiation (also in violations of regulations) and a Pepco plant- which of these types of facilities are factors in this health issue?**

A3. See preceding answer.

### **Q4. What is the exposure of Poolesville residents to the incinerator by-products?**

A4. In 1989, as part of the application for air quality construction permits for the resource recovery facility (RRF), Montgomery County submitted a Health Risk Study that was prepared by Weston. The assessment considered multiple exposure pathways, including inhalation of particulate and gaseous pollutants in the air, incidental ingestion of contaminated soils, and consumption of locally grown foods such as beef and fish. The conclusion drawn from the multi-source, multi-pollutant, multi-pathway modeling study was that residents surrounding the industrial site were not exposed to any significant increase in health risks.

In 2003, Montgomery County submitted an Update of Health Risk Study for the RRF. The updated assessment was based on six years of operating data, including actual stack test emissions from the RRF. In general, the actual emissions used in the updated risk assessment were approximately 10 times lower than the worst case emission estimates used in the Weston assessment. As a consequence, the actual health risk associated with the RRF is significantly lower than the predicted risk established in the original health study. The

Maryland Department of Natural Resources, Power Plant Research Program, has reviewed the updated health risk study and endorsed its findings.

Various risk assessment studies are available at the Montgomery County Government website, including the Update of Health Risk Study. The website is located at

[www.montgomerycountymd.gov/swstmpl.asp?url=/content/dep/solidwaste/facilities/rf\\_studies.asp](http://www.montgomerycountymd.gov/swstmpl.asp?url=/content/dep/solidwaste/facilities/rf_studies.asp)

**Q5. What do you suggest residents do to minimize exposure to radionuclides while we await the study results (drink other water, reduce the amount of steam generated in the shower, etc.)?**

A5. Currently, the radionuclide data for drinking water does not indicate the need to change your drinking water practices. Venting the moisture from the bathroom will help to remove any radon that may be in the air.



## Additional Frequently Asked Questions about the Poolesville Cancer Evaluation.

*These questions and responses are in addition to the responses compiled from the questions raised at the January 26, 2009 Town Hall Meeting.*

[http://www.ci.poolesville.md.us/PoolesvilleCancerConcerns\\_Questions\\_Answers.pdf](http://www.ci.poolesville.md.us/PoolesvilleCancerConcerns_Questions_Answers.pdf)

**Q. What was the role of the U.S. Centers for Disease Control and Prevention (CDC)?**

- A. The CDC was asked by DHMH to assist with an investigation of cancer in Poolesville. Specifically, the objectives of the CDC investigation were to:
- 1) Confirm and validate cancer cases reported by the community with those reported to the Maryland Cancer Registry; and
  - 2) Determine whether there was an excess of cancer cases in Poolesville in comparison to cancer cases observed in Montgomery County or in the state of Maryland.

**Q. How did the CDC conduct its investigation?**

- A. CDC followed the established protocol<sup>10</sup> for determining if there is an excess of cancer which is summarized in these steps:

- STEP 1. Compile the cancer cases in the geographic area of concern (Poolesville and residents of 20837)
- STEP 2. Evaluate the number of cases, and rate of cases for all cancers as well as for specific types of cancers, including types of cancers with known possible environmental causes.

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<sup>10</sup> *More information on how cancer concerns are evaluated can be found at the following websites, or requests for paper copies can be made to Montgomery County Department of Health and Human Services at 240-777-1245 or [PoolesvilleCancerConcerns@MontgomeryCountyMD.gov](mailto:PoolesvilleCancerConcerns@MontgomeryCountyMD.gov)*

- *Questions and Answers about Cancer Clusters. Maryland Cancer Registry, Maryland Department of Health and Mental Hygiene. ([http://fha.maryland.gov/pdf/cancer/mcr\\_combined\\_cancer\\_cluster.pdf](http://fha.maryland.gov/pdf/cancer/mcr_combined_cancer_cluster.pdf))*
- *Guidelines for Investigating Clusters of Health Events. (MMWR July 27, 1990/39 (RR-11); 1-16) (<http://www.cdc.gov/mmwr/preview/mmwrhtml/00001797.htm>)*
- *Cancer Inquiry Protocol: A Manual for Investigating Cancer Clusters in Missouri Communities (<http://www.dhss.mo.gov/CancerInquiry/CancerInquiryProtocol.pdf>)*
-

This step includes evaluating the cancer cases reported to the Montgomery County Department of Health and Human Services, the Maryland Cancer Registry or the District of Columbia Cancer Registry. This step also includes a process to determine if the cases reported to the County were included in the cases reported to either the Maryland Cancer Registry or The District of Columbia Cancer Registry, as well as determine if there were cases reported to the District that were not reported to Maryland.

This step also includes defining the specific types of cancers to be evaluated – including the identification and definition of the cancer types with a known potential environmental cause.

STEP 3. Determine if there is an excess in overall cancer cases or specific types of cases. This step is accomplished by comparing the number and rates of cancer to all those in Montgomery County and then to all those in Maryland. It also includes close examination of types of cancer that are too small in number to be valid in a statistical analysis, but can be further examined to determine if rare cases are relatively high given the size of the community with concerns.

STEP 4. If there is an excess of cancer cases in the area of concern, the cases are considered a potential cancer cluster and further information is collected from medical records and interviews to characterize any patterns of environmental exposures between the cancer cases.

**Q: Why wasn't I contacted by CDC after I have reported my cancer case to the County? Was everyone included in the MCR and DCCR contacted? Did you look at medical records?**

A: Contacting specific individuals would have been necessary only if an excess in cancer cases was identified. According to the CDC investigation, there was no excess of cancer cases identified (no potential cancer cluster was identified), therefore CDC did not collect additional information from interviews or medical records.

**Q: What happens next?**

A: Based on the findings of the CDC investigation, no cancer clusters have been identified in Poolesville Maryland. DHMH and HHS are committed to monitoring the cancer cases in this community and will be reevaluating the CDC findings as newer data become available to determine if there is any change in the patterns and number of cancer cases. CDC has made recommendations to DHMH and HHS which will be further addressed in the final report:

1. Maryland DHMH and DCCR should continue to work together to assure complete and timely interstate exchange of reportable cancer data.

2. MCR should update cases from both DCCR and self-reported to Montgomery County DHHS that are not yet in the MCR
  3. Maryland DHMH and Montgomery County DHHS should continue the surveillance of cancers of interest annually after case reporting for each year is complete. Specifically, this surveillance should entail a review of case data for cancer of concern including the 2008 and 2009 diagnosis years.
  4. Using the CDC report, Maryland DHMH and Montgomery County DHHS should consider jointly preparing a report that explains the CDC findings and interprets them in the context of the Poolesville community.
  5. Montgomery County DHHS, in collaboration with Maryland DHMH, should provide community education regarding the results and recommendations of this investigation, their own report, and of cancer prevention:
    - a. An appropriate forum may include a public meeting, use of local media, letters to concerned individuals who have identified their interest to Montgomery County DHHS, and/or posting a summary on the Montgomery County Department of Health and Human Services web site.
    - b. DHHS and Maryland DHMH should use this investigation and the communication of results to the community as an opportunity to increase awareness about cancer screening guidelines, promote cancer risk prevention, and to highlight local programs and services for cancer prevention and support, and encourage participation of concerned citizens in Comprehensive Cancer Control (<http://fha.maryland.gov/cancer/cancerplan/>).
    - c. The community should be encouraged to refer to the Frequently Asked Questions, a document already available on the Montgomery County Department of Health and Human Services web site.
- Q. What will the community get regarding the evaluation? Will there be a report?**
- A. The Department of Health and Mental Hygiene (DHMH) and the Montgomery County Department of Health and Human Services (DHHS) are putting together a report that will include the CDC findings about cancer in the Poolesville area and whether there appears to be any particular pattern suggesting a possible link to some common factor, either environmental or other. This report will be presented to the community by DHHS and DHMH.

## APPENDIX 3

### Description of Standardized Incidence Ratio Calculations

### Standardized Incidence Ratios

A standardized incidence ratio (SIR) compares the number of new cancer cases observed in a population (in this case, Poolesville) each year (observed incident cases) with the number that you would expect to occur if the rates of disease were the same as in the comparison (standard) population (either Montgomery County or Maryland). Age-specific rates for the standard population, which come from the Maryland Cancer Registry, are used to calculate the expected number of cases in each age group in Poolesville. These are then added up to come up with a total number of expected cases. The actual (observed) number of cases is divided by the expected number, to calculate the SIR. The mathematical formula for this is:

$$\frac{\sum c_{ia}}{\sum p_{is}n_{ia}} = \frac{\text{Observed cases in area}}{\text{Expected cases if standard rates applied to population}}$$

Where:

- a = The area of interest (e.g., Poolesville)
- s = The standard area (Montgomery County or Maryland)
- $c_{ia}$  = The number of cancer cases in the  $i$ th age cohort of the population of interest
- $n_{ia}$  = The number of individuals in the  $i$ th age cohort of the population of interest
- $p_{is}$  = The incidence rate in the  $i$ th age cohort of standard population

(adapted from Harold A. Kahn and Christopher T. Sempos, "Statistical Methods in Epidemiology", Oxford University Press, 1989, pp 85-136.)