

BLUE RIDGE ENVIRONMENTAL DEFENSE LEAGUE

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September 1, 2005

Chief, Rules and Directives Branch
Division of Administrative Services
Office of Administration
Mailstop T6-D59
US Nuclear Regulatory Commission
Washington, DC 20555-0001
NorthAnna_ESP@nrc.gov

12/10/04
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RULES AND DIRECTIVES
BRANCH
USNRC

**Re: Draft Environmental Impact Statement for North Anna Early Site Permit,
Docket 52-008, NUREG-1811**

Dear Sir or Madam:

On behalf of the Blue Ridge Environmental Defense League and our members in Virginia, I write to correct errors in the testimony delivered by an employee of Dominion Power at the February 17, 2005 hearing in Mineral, Virginia.

First, the testimony of the Blue Ridge Environmental Defense League is thorough, sound and well-documented. Our conclusion is that public health records indicate that death rates rose sharply in counties within 30 miles of Dominion/Virginia Power's North Anna plant soon after the nuclear reactors began operating compared with other counties Virginia. Specifically, we find that:

- 1) Deaths of children aged 1-4 years increased 99%
- 2) Deaths of children aged 5-14 years increased 72%
- 3) The differences between the increases in the counties near North Anna and the decreases in the U.S. and the rest of Virginia is statistically significant, with a 95% certainty ($p < .05$).

Our information source is the Centers for Disease Control Compressed Mortality Data at <http://wonder.cdc.gov>. Our analysis included deaths from infectious diseases, immune disorders, cancers and congenital defects. These medical problems are commonly associated with the effects of ionizing radiation.

Second, the allegations directed at us by a Dominion Power employee are untrue and have no basis in fact. At the NRC hearing Delbert Horn, who identified himself as an employee of Dominion Power, accused the Blue Ridge Environmental Defense League of misuse of statistics. Mr. Horn did cite the original source of our data, the Centers for Disease Control at <http://wonder.cdc.gov>; however, he claimed he had found an inconsistency in our analysis. According to the official hearing transcript (Work Order No. NRC-237, pages 157-161), he said,

SIS Review Complete

Esse quam videre

E-RIDS = ADM-03

*Adm = J. Cushing (JXC9)
A. Williamson (ARW1)*

Template = ADM-013

"While the Blue Ridge website says the death statistics exclude accidents, homicides and suicides, what I saw at wonder.cdc.gov proved otherwise. Zeller's before numbers did correctly exclude accidents, but his after numbers did not. This is how Lou makes these numbers appear to actually double." The truth is that Mr. Horn himself is guilty of careless and deliberate misuse of the facts.

At issue were the public health statistics the League used for nine Virginia counties and one city nearest to the North Anna nuclear reactors. We employed the same methodology during statistical periods before and after the North Anna power station commenced operation. We specifically eliminated homicides, suicides, and accidents. On February 17th I submitted written comments, charts and tables which detailed these findings. Much of this information was posted to our own website at <http://www.bredl.org>. I will briefly summarize the method used by the League in our analysis of public health records.

The Centers for Disease Control compiles mortality and population counts for all U.S. counties from 1979 to 2002 in a compressed mortality database. These data are freely available at the CDC website. Access to the data is at <http://wonder.cdc.gov>. At the opening webpage, there is a listing for Deaths with three options: 1) Leading Causes of Death, 2) Mortality - occupational and 3) Mortality - underlying cause of death. Clicking on "Mortality - underlying cause of death" opens the page for the compressed mortality file. Here one sees the following title:

Compressed Mortality File
Underlying Cause-of-Death
Data Use Restrictions

The Compressed Mortality database contains mortality and population counts for all U.S. counties for the years 1979 to 2002. Counts and rates of death can be obtained by underlying cause of death, state, county, age, race, sex, and year. For more information, refer to Compressed Mortality data description.

Select from following:

Mortality for 1999 - 2002 with ICD 10 codes

Mortality for 1979 - 1998 with ICD 9 codes

Mortality Archives - previous data releases for 1979-2001

Selecting "Mortality for 1979 - 1998 with ICD 9 codes" brings up the data request page which allows one to select a data set for location, date, age range, and other parameters. It also allows the researcher to group the mortality data by county. The data request page for 1979-1998 contains the following heading:

Compressed Mortality Data Request Screen
for the years 1979 -1998 with ICD 9 codes
Data Use Restrictions

The Compressed Mortality database contains mortality and population counts for all U.S. counties. Counts and rates of death can be obtained by cause of death, state, county, age, race, sex, and year. For more information refer to Compressed Mortality data description.

Note: This screen allows you to request data for the years 1979 - 1998, with underlying cause of death specified with ICD 9 codes. To request data for subsequent years, see Compressed Mortality for 1999 - 2002 with ICD 10 codes. For more information on the ICD Revision, refer to ICD Revision.

In our analysis of young children after the North Anna plant began operating, we selected the

following value for each parameter:

Compressed Mortality
Data for Years: 1983-1986
Location: Virginia (FIPS=51)
Ages: 1- 4 years
Race: All Races
Gender: Both Genders
Grouped by: County
Crude Rate Calculated per: 100,000
Cause of Death specified by the following ICD-9 Codes: [000.1-799.9]

One of the parameters necessary for the inquiry is to select the cause or causes of death. For this, one utilizes International Classification of Disease (ICD) codes. ICD-9 is the code system used for data through 1998, ICD-10 is used for data from 1999 on. The CDC website information explains the code as follows: "ICD9 is designed for the classification of Morbidity and Mortality information for statistical purposes, and for the indexing of hospital records by disease and operations, for data storage and retrieval. This publication is maintained by the World Health Organization." The International Classification of Disease codes (ICD-9 Finder) list causes of death as follows:

001-139.8	infectious and parasitic diseases
140-239.9	neoplasms
240-289.9	endocrine, nutritional and metabolic diseases, and immunity disorders
290-319	mental disorders
320-389.9	diseases of the nervous system and sense organs
390-459.9	diseases of the circulatory system
460-519.9	diseases of the respiratory system
520-579.9	diseases of the digestive system
580-629.9	diseases of the genitourinary system
630-676.9	complications of pregnancy, childbirth and the puerperium
680-709.9	diseases of the skin and subcutaneous tissue
710-739.9	diseases of the musculoskeletal system and connective tissue
740-759.9	congenital anomalies
760-779.9	certain conditions originating in the perinatal period
780-799.9	symptoms, signs, and ill-defined conditions
800-999	external causes of injury and poisoning

For the mortality data submitted to the NRC by the Blue Ridge Environmental Defense League on February 17, 2005 and in an earlier compilation posted to our website referred to by Mr. Horn, we utilized ICD-9 codes 001 - 799.9 throughout. Our methodology specifically eliminated homicides, suicides, and accidents (ICD 800-999) during statistical periods *both before and after* criticality at North Anna. Thus, Mr. Horn's charge that our analysis included accidental deaths after the reactors started is bogus.

Our final step was to compile the CDC death statistics in Albemarle, Culpeper, Fluvanna, Goochland, Greene, Louisa, Madison, Orange, Spotsylvania, and Charlottesville City and compare these with the death rates other counties and cities in the state and the nation. So, we see that in the counties nearest North Anna the death rate in children 1-4 years of age increased by 99% between 1979 and 1986 while in the remaining 126 Virginia counties and cities the death rate *decreased* by 8%; likewise, for children ages 5-14, local increase 72%, statewide decrease 3%. A similar pattern is observed in the death rates for children under 1 year of age and in fetal deaths (stillbirths).

Third, Mr. Horn's accusations reveal a flawed logic. For example, Mr. Horn stated that in the 4-year old cohort of our analysis there was one case of death by criminal neglect and three deaths by fire. Even if these accidental deaths had been incorrectly included in the data—which they were not—the total number of deaths would decrease but slightly, from 26 to 22. However, the number of deaths among children 1 to 4 years of age before North Anna opened was 12. So, if anyone at the hearing actually accepted Mr. Horn's opinions, the analysis would be as follows:

12 deaths in a population of 49,637 before North Anna opened = 24.18 per 100,000

22 deaths in a population of 54,075 after North Anna opened = 40.68 per 100,000

Here we see that the mortality increase in children 1 to 4 years of age after North Anna opened would still be very high at 68%. Similar points could be made regarding the 5 to 14 year old cohort. Mr. Horn's allegations are not only specious, they do nothing to alter the conclusion that deaths increased significantly after the nuclear reactors began operation.

In summary, according to Centers for Disease Control Compressed Mortality Data, the death rates in Albemarle, Culpeper, Fluvanna, Goochland, Greene, Louisa, Madison, Orange, Spotsylvania, and Charlottesville City increased after North Anna Units 1 and 2 began operation (dates of initial criticality 4/5/78 and 6/12/80) in all the age groups the League studied.

Further, the differences between the increases in the counties near North Anna and the decreases in the U.S. and the rest of Virginia is statistically significant, with a 95% certainty ($p < .05$). Again, in our analysis, we utilized ICD-9 codes 001 - 799.9 throughout, eliminating homicides, suicides, and accidents (ICD 800-999) *before and after* the North Anna power station commenced operation. The following tables detail our findings:

Fetuses and Infants

	Death Rate Per 100,000 1978	Actual Deaths 1978	Death Rate Per 100,000 1979-81	Actual Deaths (avg.) 1979-81	% Change in Death Rate Local	% Change in Death Rate Other VA
Fetal Deaths*	1398	44	1432	142	+ 3%	- 15%
Deaths < 28 days	763	24	857	85	+ 12%	+ 1%
Deaths < 1 year	1112	35	1231	122	+ 11%	- 9%

*Stillbirths gestation 20 weeks or more

Esse quam videre

Children Age 1 to 14 Years

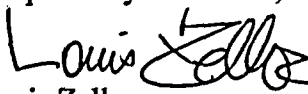
	Death Rate Per 100,000 1979-82	Actual Deaths (avg.) 1979-82	Death Rate Per 100,000 1983-86	Actual Deaths (avg.) 1983-86	% Change in Death Rate Local	% Change in Death Rate Other VA
All Causes age 1-4	24.18	12	48.08	26	+ 99%	- 8%
	1983-86	1983-86	1987-90	1987-90		
All Causes age 5-14	8.40	11	14.46	21	+ 72%	- 3%

Adults

	Actual Deaths 1978	Actual Deaths (average) 1979-82	% Change in Deaths Local	% Change in Deaths Other VA
All Causes, All Ages	1763	1876	+ 6.4%	+ 2.5%

We contest Mr. Horn's false allegations and ask that the NRC note this in the record of proceedings for the Early Site Permit Environmental Impact Statement. Moreover, we believe that the data confirm a need for further investigations into morbidity and mortality in the communities around the North Anna nuclear power station. We hereby repeat our earlier request and ask that the NRC commence a study to examine radiation dose in the central Virginia area surrounding North Anna before taking any action to approve a permit.

Respectfully submitted,


Louis Zeller

Attached are the complete Centers for Disease Control Compressed Mortality Data Requests for children 1-4 years of age in all counties in the state of Virginia which we used to compile death rates for those who lived near the North Anna nuclear station.



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Compressed Mortality

Query Description: Compressed Mortality

Data for Years: 1979-1982

Location: Virginia (FIPS=51)

Ages: 1- 4 years

Race: All Races

Gender: Both Genders

Grouped by: County

Crude Rate Calculated per: 100,000

Cause of Death specified by the following ICD-9 Codes:
[001-799.9]

Location Code	County Name	Death Count	Population	Crude Death Rate
51001	ACCOMACK	3	6,539	45.9 (Unreliable Rate)
51003	ALBEMARLE	3	10,810	27.8 (Unreliable Rate)
51005	ALLEGHANY	1	3,068	32.6 (Unreliable Rate)
51007	AMELIA	1	1,856	53.9 (Unreliable Rate)
51009	AMHERST	2	5,895	33.9 (Unreliable Rate)
51011	APPOMATTOX	1	2,678	37.3 (Unreliable Rate)
				34.9

51013	ARLINGTON	8	22,933	(Unreliable Rate)
51015	AUGUSTA	4	10,414	38.4 (Unreliable Rate)
51017	BATH	1	1,028	97.3 (Unreliable Rate)
51019	BEDFORD	1	7,702	13.0 (Unreliable Rate)
51021	BLAND	0	1,249	0.0 (Unreliable Rate)
51023	BOTETOURT	1	4,586	21.8 (Unreliable Rate)
51025	BRUNSWICK	1	3,333	30.0 (Unreliable Rate)
51027	BUCHANAN	1	10,533	9.5 (Unreliable Rate)
51029	BUCKINGHAM	2	2,433	82.2 (Unreliable Rate)
51031	CAMPBELL	4	10,221	39.1 (Unreliable Rate)
51033	CAROLINE	3	4,323	69.4 (Unreliable Rate)
51035	CARROLL	1	5,304	18.9 (Unreliable Rate)
51036	CHARLES CITY	1	1,534	65.2 (Unreliable Rate)
51037	CHARLOTTE	1	2,609	38.3 (Unreliable Rate)
51041	CHESTERFIELD	5	35,066	14.3 (Unreliable Rate)

				Rate)
51043	CLARKE	0	1,944	0.0 (Unreliable Rate)
51045	CRAIG	0	772	0.0 (Unreliable Rate)
51047	CULPEPER	0	5,274	0.0 (Unreliable Rate)
51049	CUMBERLAND	2	1,669	119.8 (Unreliable Rate)
51051	DICKENSON	2	5,203	38.4 (Unreliable Rate)
51053	DINWIDDIE	1	4,022	24.9 (Unreliable Rate)
51057	ESSEX	2	1,828	109.4 (Unreliable Rate)
51059	FAIRFAX	30	127,528	23.5
51061	FAUQUIER	2	8,328	24.0 (Unreliable Rate)
51063	FLOYD	0	2,331	0.0 (Unreliable Rate)
51065	FLUVANNA	1	2,375	42.1 (Unreliable Rate)
51067	FRANKLIN	3	7,370	40.7 (Unreliable Rate)
51069	FREDERICK	2	8,128	24.6 (Unreliable Rate)
51071	GILES	2	3,567	56.1 (Unreliable Rate)
				0.0

51073	GLOUCESTER	0	4,464	(Unreliable Rate)
51075	GOOCHLAND	0	2,248	0.0 (Unreliable Rate)
51077	GRAYSON	1	3,120	32.1 (Unreliable Rate)
51079	GREENE	0	2,046	0.0 (Unreliable Rate)
51081	GREENSVILLE	2	2,555	78.3 (Unreliable Rate)
51083	HALIFAX	6	6,485	92.5 (Unreliable Rate)
51085	HANOVER	5	10,381	48.2 (Unreliable Rate)
51087	HENRICO	12	36,318	33.0 (Unreliable Rate)
51089	HENRY	4	12,164	32.9 (Unreliable Rate)
51091	HIGHLAND	0	628	0.0 (Unreliable Rate)
51093	ISLE OF WIGHT	2	4,967	40.3 (Unreliable Rate)
51095	JAMES CITY	0	4,869	0.0 (Unreliable Rate)
51097	KING AND QUEEN	0	1,397	0.0 (Unreliable Rate)
51099	KING GEORGE	2	2,651	75.4 (Unreliable Rate)
51101	KING WILLIAM	1	2,118	47.2 (Unreliable Rate)

				Rate)
51103	LANCASTER	0	1,734	0.0 (Unreliable Rate)
51105	LEE	3	6,158	48.7 (Unreliable Rate)
51107	LOUDOUN	2	14,245	14.0 (Unreliable Rate)
51109	LOUISA	4	4,014	99.7 (Unreliable Rate)
51111	LUNENBERG	0	2,505	0.0 (Unreliable Rate)
51113	MADISON	0	2,217	0.0 (Unreliable Rate)
51115	MATHEWS	0	1,217	0.0 (Unreliable Rate)
51117	MECKLENBURG	1	6,358	15.7 (Unreliable Rate)
51119	MIDDLESEX	0	1,306	0.0 (Unreliable Rate)
51121	MONTGOMERY	6	10,231	58.6 (Unreliable Rate)
51125	NELSON	1	2,453	40.8 (Unreliable Rate)
51127	NEW KENT	0	1,988	0.0 (Unreliable Rate)
51131	NORTHAMPTON	0	3,201	0.0 (Unreliable Rate)
51133	NORTHUMBERLAND	0	1,639	0.0 (Unreliable Rate)

51135	NOTTOWAY	1	3,023	33.1 (Unreliable Rate)
51137	ORANGE	2	3,784	52.9 (Unreliable Rate)
51139	PAGE	2	4,237	47.2 (Unreliable Rate)
51141	PATRICK	0	3,421	0.0 (Unreliable Rate)
51143	PITTSYLVANIA	3	12,974	23.1 (Unreliable Rate)
51145	POWHATAN	1	2,546	39.3 (Unreliable Rate)
51147	PRINCE EDWARD	1	3,182	31.4 (Unreliable Rate)
51149	PRINCE GEORGE	1	6,208	16.1 (Unreliable Rate)
51153	PRINCE WILLIAM	14	44,213	31.7 (Unreliable Rate)
51155	PULASKI	2	7,320	27.3 (Unreliable Rate)
51157	RAPPAHANNOCK	0	1,164	0.0 (Unreliable Rate)
51159	RICHMOND	0	1,397	0.0 (Unreliable Rate)
51161	ROANOKE	5	12,891	38.8 (Unreliable Rate)
51163	ROCKBRIDGE	0	3,520	0.0 (Unreliable Rate)
				48.4

51165	ROCKINGHAM	6	12,390	(Unreliable Rate)
51167	RUSSELL	3	7,398	40.6 (Unreliable Rate)
51169	SCOTT	0	4,960	0.0 (Unreliable Rate)
51171	SHENANDOAH	3	5,324	56.3 (Unreliable Rate)
51173	SMYTH	2	6,726	29.7 (Unreliable Rate)
51175	SOUTHAMPTON	0	3,681	0.0 (Unreliable Rate)
51177	SPOTSYLVANIA	1	9,745	10.3 (Unreliable Rate)
51179	STAFFORD	3	10,584	28.3 (Unreliable Rate)
51181	SURRY	0	1,351	0.0 (Unreliable Rate)
51183	SUSSEX	1	2,059	48.6 (Unreliable Rate)
51185	TAZEWELL	4	12,459	32.1 (Unreliable Rate)
51187	WARREN	0	4,507	0.0 (Unreliable Rate)
51191	WASHINGTON	2	9,460	21.1 (Unreliable Rate)
51193	WESTMORELAND	1	2,806	35.6 (Unreliable Rate)
51195	WISE	1	11,253	8.9 (Unreliable Rate)

				Rate)
51197	WYTHE	0	5,415	0.0 (Unreliable Rate)
51199	YORK	2	7,362	27.2 (Unreliable Rate)
51510	ALEXANDRIA CITY	6	17,769	33.8 (Unreliable Rate)
51515	BEDFORD CITY	0	1,128	0.0 (Unreliable Rate)
51520	BRISTOL CITY	2	3,412	58.6 (Unreliable Rate)
51530	BUENA VISTA CITY	0	1,352	0.0 (Unreliable Rate)
51540	CHARLOTTESVILLE CITY	1	7,124	14.0 (Unreliable Rate)
51550	CHESAPEAKE CITY	9	29,844	30.2 (Unreliable Rate)
51560	CLIFTON FORGE CITY	0	969	0.0 (Unreliable Rate)
51570	COLONIAL HEIGHTS CITY	0	2,859	0.0 (Unreliable Rate)
51580	COVINGTON CITY	0	1,543	0.0 (Unreliable Rate)
51590	DANVILLE CITY	6	9,614	62.4 (Unreliable Rate)
51595	EMPORIA CITY	0	1,082	0.0 (Unreliable Rate)
51600	FAIRFAX CITY	3	3,586	83.7 (Unreliable Rate)

51610	FALLS CHURCH CITY	1	1,457	68.6 (Unreliable Rate)
51620	FRANKLIN CITY	0	1,669	0.0 (Unreliable Rate)
51630	FREDERICKSBURG CITY	2	2,960	67.6 (Unreliable Rate)
51640	GALAX CITY	1	1,158	86.4 (Unreliable Rate)
51650	HAMPTON CITY	12	29,292	41.0 (Unreliable Rate)
51660	HARRISONBURG CITY	0	3,071	0.0 (Unreliable Rate)
51670	HOPEWELL CITY	2	5,745	34.8 (Unreliable Rate)
51678	LEXINGTON CITY	0	819	0.0 (Unreliable Rate)
51680	LYNCHBURG CITY	4	13,423	29.8 (Unreliable Rate)
51683	MANASSAS	0	5,330	0.0 (Unreliable Rate)
51685	MANASSAS PARK	0	2,377	0.0 (Unreliable Rate)
51690	MARTINSVILLE CITY	1	3,382	29.6 (Unreliable Rate)
51700	NEWPORT NEWS CITY	12	38,242	31.4 (Unreliable Rate)
51710	NORFOLK CITY	20	66,574	30.0
51720	NORTON CITY	0	1,079	0.0 (Unreliable Rate)

51730	PETERSBURG CITY	1	9,295	10.8 (Unreliable Rate)
51735	POQUOSON	0	1,944	0.0 (Unreliable Rate)
51740	PORTSMOUTH CITY	9	27,461	32.8 (Unreliable Rate)
51750	RADFORD CITY	2	1,632	122.5 (Unreliable Rate)
51760	RICHMOND CITY	18	42,976	41.9 (Unreliable Rate)
51770	ROANOKE CITY	5	20,806	24.0 (Unreliable Rate)
51775	SALEM CITY	1	3,973	25.2 (Unreliable Rate)
51780	SOUTH BOSTON CITY	0	1,442	0.0 (Unreliable Rate)
51790	STAUNTON CITY	2	3,956	50.6 (Unreliable Rate)
51800	SUFFOLK CITY	4	10,947	36.5 (Unreliable Rate)
51810	VIRGINIA BEACH CITY	24	67,740	35.4
51820	WAYNESBORO CITY	0	3,403	0.0 (Unreliable Rate)
51830	WILLIAMSBURG CITY	0	768	0.0 (Unreliable Rate)
51840	WINCHESTER CITY	2	3,983	50.2 (Unreliable Rate)

Total Deaths = 355

Total Population = 1,174,676

Notes: See Compressed Mortality File Documentation for more information.

Suggested Citation: United States Department of Health and Human Services (US DHHS), Centers for Disease Control and Prevention (CDC), National Center for Health Statistics (NCHS), Compressed Mortality File (CMF) compiled from CMF 1968-1988, Series 20, No. 2A 2000, CMF 1989-1998, Series 20, No. 2E 2003 and CMF 1999-2002, Series 20, No. 2H 2004 on CDC WONDER On-line Database.

Other Issues: About the population denominator data: Note that the population estimates for non-Census years are frequently revised. Such changes affect the death rates, as population estimates are the denominator when mortality rates are calculated. The bridged-race intercensal population estimates for 1991-98 (revisions of the postcensal population estimates previously used on the CMF) became available in July, 2003 and are used in this edition of the CMF. For some groups, state and county population estimates have changed considerably, resulting in large changes to the corresponding death rates.

Underlying cause of death is classified in accordance with the International Classification of Disease. Deaths for 1979-98 are classified using the Ninth Revision (ICD-9). Deaths for 1999 and beyond are classified using the Tenth Revision (ICD-10).

About Compressed Mortality Location Codes:

The state you have selected has county-level changes. Counties in this state may not have data for the full range of years in your query. Comparable total deaths and death rates may be misleading for such counties. See Location Updates for more information.

Virginia reports data separately for many independent cities, instead of aggregating those cities with adjacent counties. Group the data by County and by Year to see the separate reporting areas.

In 1995, the formerly independent city South Boston city, Virginia (FIPS code 51780) merged with Halifax county, Virginia (FIPS code 51083). Thus Halifax death rates may not be comparable for years preceding the change. Deaths and population estimates for South Boston city are aggregated with those for Halifax county for the years 1989-2000 in the CMF published in 2003.

Since 1979, Nansemond city, Virginia (FIPS code 51123) has been part of Suffolk, Virginia (FIPS code 51800). Deaths and population estimates for Nansemond city are aggregated with those for Suffolk.

On 7-1-2001, the formerly independent Clifton Forge city, Virginia (FIPS code 51560) merged with Alleghany county (FIPS code 51005). Deaths and population estimates are shown for Clifton Forge city through 2000.

Query
Date:

9/1/2005 11:58:33 PM

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Compressed Mortality

Query Description: Compressed Mortality

Data for Years: 1979-1982

Location: Virginia (FIPS=51)

Ages: 1- 4 years

Race: All Races

Gender: Both Genders

Grouped by: County

Crude Rate Calculated per: 100,000

Cause of Death specified by the following ICD-9 Codes:
[001-799.9]

Location Code	County Name	Death Count	Population	Crude Death Rate
51001	ACCOMACK	3	6,539	45.9 (Unreliable Rate)
51003	ALBEMARLE	3	10,810	27.8 (Unreliable Rate)
51005	ALLEGHANY	1	3,068	32.6 (Unreliable Rate)
51007	AMELIA	1	1,856	53.9 (Unreliable Rate)
51009	AMHERST	2	5,895	33.9 (Unreliable Rate)
51011	APPOMATTOX	1	2,678	37.3 (Unreliable Rate)
				34.9

51013	ARLINGTON	8	22,933	(Unreliable Rate)
51015	AUGUSTA	4	10,414	38.4 (Unreliable Rate)
51017	BATH	1	1,028	97.3 (Unreliable Rate)
51019	BEDFORD	1	7,702	13.0 (Unreliable Rate)
51021	BLAND	0	1,249	0.0 (Unreliable Rate)
51023	BOTETOURT	1	4,586	21.8 (Unreliable Rate)
51025	BRUNSWICK	1	3,333	30.0 (Unreliable Rate)
51027	BUCHANAN	1	10,533	9.5 (Unreliable Rate)
51029	BUCKINGHAM	2	2,433	82.2 (Unreliable Rate)
51031	CAMPBELL	4	10,221	39.1 (Unreliable Rate)
51033	CAROLINE	3	4,323	69.4 (Unreliable Rate)
51035	CARROLL	1	5,304	18.9 (Unreliable Rate)
51036	CHARLES CITY	1	1,534	65.2 (Unreliable Rate)
51037	CHARLOTTE	1	2,609	38.3 (Unreliable Rate)
51041	CHESTERFIELD	5	35,066	14.3 (Unreliable Rate)

				Rate)
51043	CLARKE	0	1,944	0.0 (Unreliable Rate)
51045	CRAIG	0	772	0.0 (Unreliable Rate)
51047	CULPEPER	0	5,274	0.0 (Unreliable Rate)
51049	CUMBERLAND	2	1,669	119.8 (Unreliable Rate)
51051	DICKENSON	2	5,203	38.4 (Unreliable Rate)
51053	DINWIDDIE	1	4,022	24.9 (Unreliable Rate)
51057	ESSEX	2	1,828	109.4 (Unreliable Rate)
51059	FAIRFAX	30	127,528	23.5
51061	FAUQUIER	2	8,328	24.0 (Unreliable Rate)
51063	FLOYD	0	2,331	0.0 (Unreliable Rate)
51065	FLUVANNA	1	2,375	42.1 (Unreliable Rate)
51067	FRANKLIN	3	7,370	40.7 (Unreliable Rate)
51069	FREDERICK	2	8,128	24.6 (Unreliable Rate)
51071	GILES	2	3,567	56.1 (Unreliable Rate)
				0.0

51073	GLOUCESTER	0	4,464	(Unreliable Rate)
51075	GOOCHLAND	0	2,248	0.0 (Unreliable Rate)
51077	GRAYSON	1	3,120	32.1 (Unreliable Rate)
51079	GREENE	0	2,046	0.0 (Unreliable Rate)
51081	GREENSVILLE	2	2,555	78.3 (Unreliable Rate)
51083	HALIFAX	6	6,485	92.5 (Unreliable Rate)
51085	HANOVER	5	10,381	48.2 (Unreliable Rate)
51087	HENRICO	12	36,318	33.0 (Unreliable Rate)
51089	HENRY	4	12,164	32.9 (Unreliable Rate)
51091	HIGHLAND	0	628	0.0 (Unreliable Rate)
51093	ISLE OF WIGHT	2	4,967	40.3 (Unreliable Rate)
51095	JAMES CITY	0	4,869	0.0 (Unreliable Rate)
51097	KING AND QUEEN	0	1,397	0.0 (Unreliable Rate)
51099	KING GEORGE	2	2,651	75.4 (Unreliable Rate)
51101	KING WILLIAM	1	2,118	47.2 (Unreliable Rate)

				Rate)
51103	LANCASTER	0	1,734	0.0 (Unreliable Rate)
51105	LEE	3	6,158	48.7 (Unreliable Rate)
51107	LOUDOUN	2	14,245	14.0 (Unreliable Rate)
51109	LOUISA	4	4,014	99.7 (Unreliable Rate)
51111	LUNENBERG	0	2,505	0.0 (Unreliable Rate)
51113	MADISON	0	2,217	0.0 (Unreliable Rate)
51115	MATHEWS	0	1,217	0.0 (Unreliable Rate)
51117	MECKLENBURG	1	6,358	15.7 (Unreliable Rate)
51119	MIDDLESEX	0	1,306	0.0 (Unreliable Rate)
51121	MONTGOMERY	6	10,231	58.6 (Unreliable Rate)
51125	NELSON	1	2,453	40.8 (Unreliable Rate)
51127	NEW KENT	0	1,988	0.0 (Unreliable Rate)
51131	NORTHAMPTON	0	3,201	0.0 (Unreliable Rate)
51133	NORTHUMBERLAND	0	1,639	0.0 (Unreliable Rate)

51135	NOTTOWAY	1	3,023	33.1 (Unreliable Rate)
51137	ORANGE	2	3,784	52.9 (Unreliable Rate)
51139	PAGE	2	4,237	47.2 (Unreliable Rate)
51141	PATRICK	0	3,421	0.0 (Unreliable Rate)
51143	PITTSYLVANIA	3	12,974	23.1 (Unreliable Rate)
51145	POWHATAN	1	2,546	39.3 (Unreliable Rate)
51147	PRINCE EDWARD	1	3,182	31.4 (Unreliable Rate)
51149	PRINCE GEORGE	1	6,208	16.1 (Unreliable Rate)
51153	PRINCE WILLIAM	14	44,213	31.7 (Unreliable Rate)
51155	PULASKI	2	7,320	27.3 (Unreliable Rate)
51157	RAPPAHANNOCK	0	1,164	0.0 (Unreliable Rate)
51159	RICHMOND	0	1,397	0.0 (Unreliable Rate)
51161	ROANOKE	5	12,891	38.8 (Unreliable Rate)
51163	ROCKBRIDGE	0	3,520	0.0 (Unreliable Rate)
				48.4

51165	ROCKINGHAM	6	12,390	(Unreliable Rate)
51167	RUSSELL	3	7,398	40.6 (Unreliable Rate)
51169	SCOTT	0	4,960	0.0 (Unreliable Rate)
51171	SHENANDOAH	3	5,324	56.3 (Unreliable Rate)
51173	SMYTH	2	6,726	29.7 (Unreliable Rate)
51175	SOUTHAMPTON	0	3,681	0.0 (Unreliable Rate)
51177	SPOTSYLVANIA	1	9,745	10.3 (Unreliable Rate)
51179	STAFFORD	3	10,584	28.3 (Unreliable Rate)
51181	SURRY	0	1,351	0.0 (Unreliable Rate)
51183	SUSSEX	1	2,059	48.6 (Unreliable Rate)
51185	TAZEWELL	4	12,459	32.1 (Unreliable Rate)
51187	WARREN	0	4,507	0.0 (Unreliable Rate)
51191	WASHINGTON	2	9,460	21.1 (Unreliable Rate)
51193	WESTMORELAND	1	2,806	35.6 (Unreliable Rate)
51195	WISE	1	11,253	8.9 (Unreliable Rate)

				Rate)
51197	WYTHE	0	5,415	0.0 (Unreliable Rate)
51199	YORK	2	7,362	27.2 (Unreliable Rate)
51510	ALEXANDRIA CITY	6	17,769	33.8 (Unreliable Rate)
51515	BEDFORD CITY	0	1,128	0.0 (Unreliable Rate)
51520	BRISTOL CITY	2	3,412	58.6 (Unreliable Rate)
51530	BUENA VISTA CITY	0	1,352	0.0 (Unreliable Rate)
51540	CHARLOTTESVILLE CITY	1	7,124	14.0 (Unreliable Rate)
51550	CHESAPEAKE CITY	9	29,844	30.2 (Unreliable Rate)
51560	CLIFTON FORGE CITY	0	969	0.0 (Unreliable Rate)
51570	COLONIAL HEIGHTS CITY	0	2,859	0.0 (Unreliable Rate)
51580	COVINGTON CITY	0	1,543	0.0 (Unreliable Rate)
51590	DANVILLE CITY	6	9,614	62.4 (Unreliable Rate)
51595	EMPORIA CITY	0	1,082	0.0 (Unreliable Rate)
51600	FAIRFAX CITY	3	3,586	83.7 (Unreliable Rate)

51610	FALLS CHURCH CITY	1	1,457	68.6 (Unreliable Rate)
51620	FRANKLIN CITY	0	1,669	0.0 (Unreliable Rate)
51630	FREDERICKSBURG CITY	2	2,960	67.6 (Unreliable Rate)
51640	GALAX CITY	1	1,158	86.4 (Unreliable Rate)
51650	HAMPTON CITY	12	29,292	41.0 (Unreliable Rate)
51660	HARRISONBURG CITY	0	3,071	0.0 (Unreliable Rate)
51670	HOPEWELL CITY	2	5,745	34.8 (Unreliable Rate)
51678	LEXINGTON CITY	0	819	0.0 (Unreliable Rate)
51680	LYNCHBURG CITY	4	13,423	29.8 (Unreliable Rate)
51683	MANASSAS	0	5,330	0.0 (Unreliable Rate)
51685	MANASSAS PARK	0	2,377	0.0 (Unreliable Rate)
51690	MARTINSVILLE CITY	1	3,382	29.6 (Unreliable Rate)
51700	NEWPORT NEWS CITY	12	38,242	31.4 (Unreliable Rate)
51710	NORFOLK CITY	20	66,574	30.0
51720	NORTON CITY	0	1,079	0.0 (Unreliable Rate)

51730	PETERSBURG CITY	1	9,295	10.8 (Unreliable Rate)
51735	POQUOSON	0	1,944	0.0 (Unreliable Rate)
51740	PORTSMOUTH CITY	9	27,461	32.8 (Unreliable Rate)
51750	RADFORD CITY	2	1,632	122.5 (Unreliable Rate)
51760	RICHMOND CITY	18	42,976	41.9 (Unreliable Rate)
51770	ROANOKE CITY	5	20,806	24.0 (Unreliable Rate)
51775	SALEM CITY	1	3,973	25.2 (Unreliable Rate)
51780	SOUTH BOSTON CITY	0	1,442	0.0 (Unreliable Rate)
51790	STAUNTON CITY	2	3,956	50.6 (Unreliable Rate)
51800	SUFFOLK CITY	4	10,947	36.5 (Unreliable Rate)
51810	VIRGINIA BEACH CITY	24	67,740	35.4
51820	WAYNESBORO CITY	0	3,403	0.0 (Unreliable Rate)
51830	WILLIAMSBURG CITY	0	768	0.0 (Unreliable Rate)
51840	WINCHESTER CITY	2	3,983	50.2 (Unreliable Rate)

Total Deaths = 355

Total Population = 1,174,676

Notes: See Compressed Mortality File Documentation for more information.

Suggested Citation: United States Department of Health and Human Services (US DHHS), Centers for Disease Control and Prevention (CDC), National Center for Health Statistics (NCHS), Compressed Mortality File (CMF) compiled from CMF 1968-1988, Series 20, No. 2A 2000, CMF 1989-1998, Series 20, No. 2E 2003 and CMF 1999-2002, Series 20, No. 2H 2004 on CDC WONDER On-line Database.

Other issues: About the population denominator data: Note that the population estimates for non-Census years are frequently revised. Such changes affect the death rates, as population estimates are the denominator when mortality rates are calculated. The bridged-race intercensal population estimates for 1991-98 (revisions of the postcensal population estimates previously used on the CMF) became available in July, 2003 and are used in this edition of the CMF. For some groups, state and county population estimates have changed considerably, resulting in large changes to the corresponding death rates.

Underlying cause of death is classified in accordance with the International Classification of Disease. Deaths for 1979-98 are classified using the Ninth Revision (ICD-9). Deaths for 1999 and beyond are classified using the Tenth Revision (ICD-10).

About Compressed Mortality Location Codes:

The state you have selected has county-level changes. Counties in this state may not have data for the full range of years in your query. Comparable total deaths and death rates may be misleading for such counties. See Location Updates for more information.

Virginia reports data separately for many independent cities, instead of aggregating those cities with adjacent counties. Group the data by County and by Year to see the separate reporting areas.

In 1995, the formerly independent city South Boston city, Virginia (FIPS code 51780) merged with Halifax county, Virginia (FIPS code 51083). Thus Halifax death rates may not be comparable for years preceding the change. Deaths and population estimates for South Boston city are aggregated with those for Halifax county for the years 1989-2000 in the CMF published in 2003.

Since 1979, Nansemond city, Virginia (FIPS code 51123) has been part of Suffolk, Virginia (FIPS code 51800). Deaths and population estimates for Nansemond city are aggregated with those for Suffolk.

On 7-1-2001, the formerly independent Clifton Forge city, Virginia (FIPS code 51560) merged with Alleghany county (FIPS code 51005). Deaths and population estimates are shown for Clifton Forge city through 2000.

Query
Date:

9/1/2005 11:58:33 PM

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