

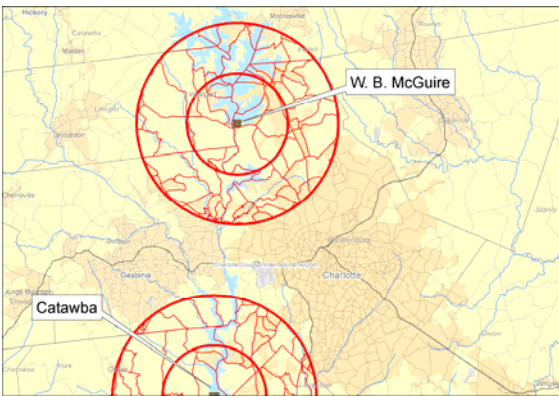
**Limitations of Cancer Ecologic Studies
of Populations near U.S. Nuclear Plant Sites**

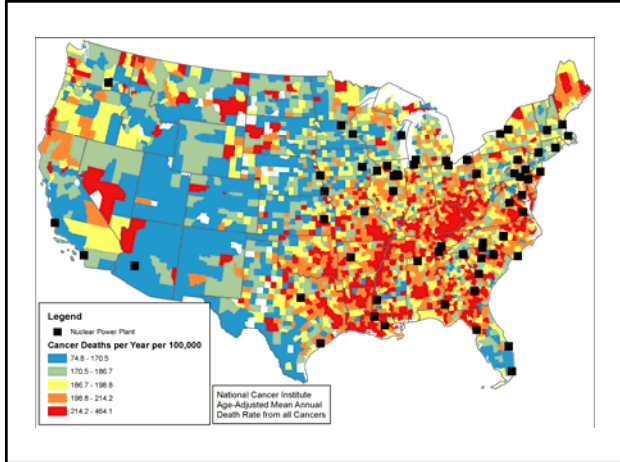
by
Thomas B. Cochran, Ph.D.

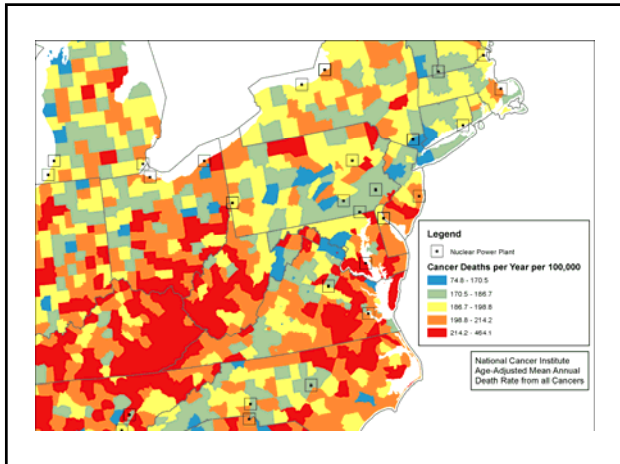
Presented
at the
Regulatory Information Conference (RIC)
U.S. Nuclear Regulatory Commission (NRC)

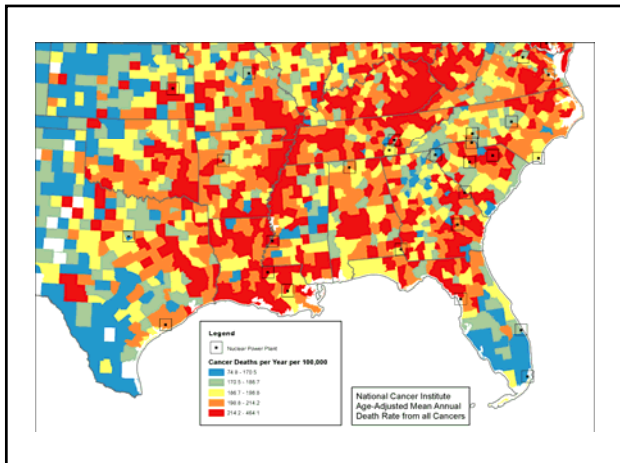
March 10, 2011
Bethesda, Maryland

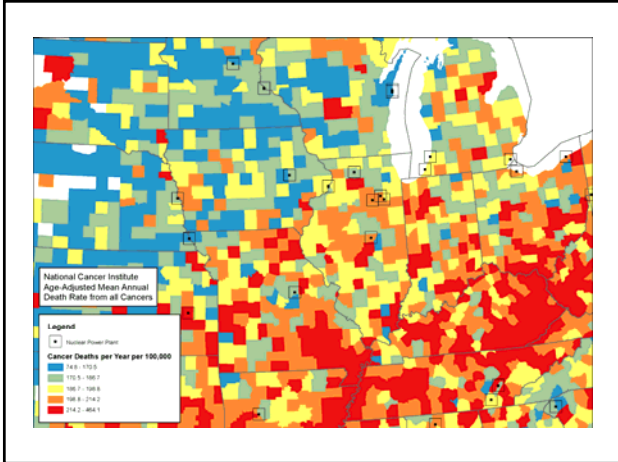
104 reactors at
65 stations at
64 sites [63 "sites" if Nine Mile Point and
James FitzPatrick are treated as one] in
63 counties
857,000 people (2010) in 131 counties < 5 miles
3,895,000 people (2010) in 184 counties <10 miles
19 sites where 5 mi-area is entirely within one county
7 sites where county border is < 5 mi
2 sites at/near DOE nuclear reservations
2 sites where partial core meltdowns occurred
In counties where reactors are located, the county population
(avg. 2003-2007) ranged from
6,949 (Surry Co. VA) to
3,638,000 (Maricopa, AZ)

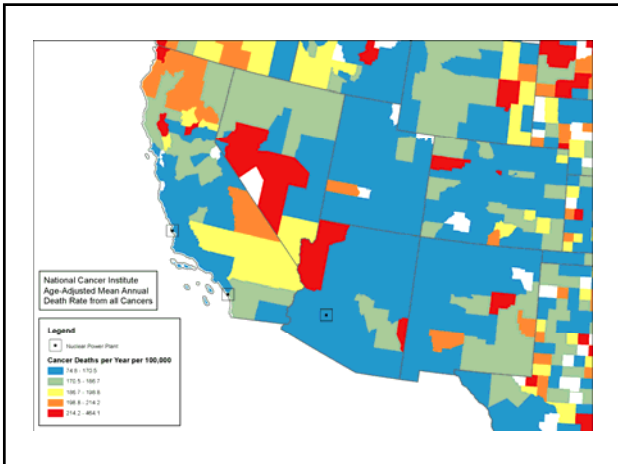








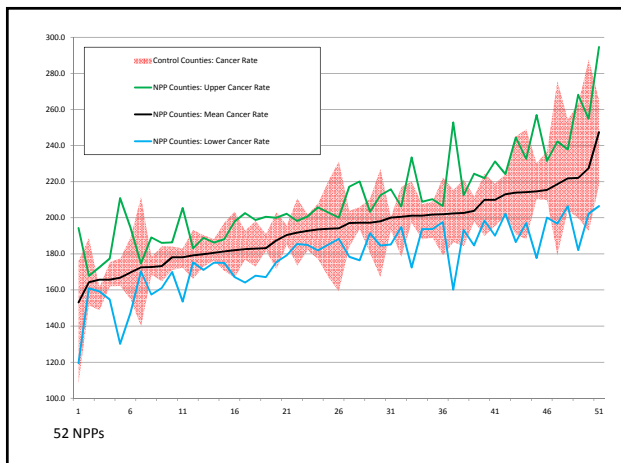


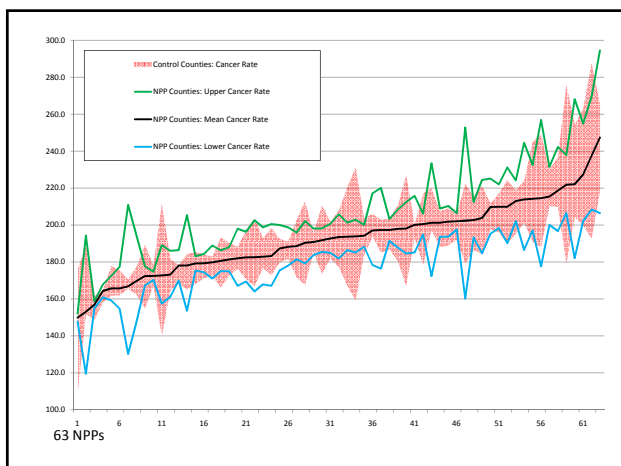


Age Adjusted cancer mortality (avg. 2003-2007)
Deaths/100,000 persons
(All ages, races, ethnic groups, both sexes)

U.S average = 183.8
63 counties where nuclear plants are located:
avg. = 174.7
range: 153.1 (-16.7%) to 247.4 (+34.6%)

< 5 mi: 1,625 cancer deaths/year
<10 mi: 7,400 cancer deaths/year





Surry County, Virginia

6,949 people in the county
704 people < 5 mi
202.4 (160.2, 252.8) cancer deaths/year/100,000
14.1 (-3, +3.5) cancer deaths/year

BEIR VII
Mean: 57/100,000 cancer deaths per person-rem

4 cancer deaths could result from 7,000 person-rem;
but this is 10 rem/person averaged over 704 people,
which is not credible

Per 1 mrem/year average individual exposure

857,000 people < 5 mi at 63 sites
857 person-rem
22.8 years average exposure period
19,540 person-rem

BEIR VII best estimate: 57/100,000 cancer deaths per person-rem

11 cancer deaths over lifetimes of exposed
compared to
1,625 cancer deaths/year < 55 mi from 63 sites
