



## Fact Sheet on Fallout Report and Related Maps

We offer the following observations and interpretations on the report by the Centers for Disease Control and Prevention and the National Cancer Institute, titled *Progress Report to Congress: A Feasibility Study of the Health Consequences to the American Population of Nuclear Weapons Test Conducted by the United States and Other Nations* (referred to hereafter as the CDC/NCI study), and its accompanying maps. **These documents can be found below.** (The report and maps are also scheduled to be posted at the Centers for Disease Control and Prevention’s web site, [www.cdc.gov](http://www.cdc.gov).)

- The report defined the term “global fallout” as all fallout except that of tests conducted at the Nevada Test Site (NTS). “Global fallout” is thus fallout from nuclear tests conducted by Britain (at Christmas Island), the Soviet Union (at Semipalatinsk and Novaya Zemlya), and the United States (at Marshall Islands and Johnston Atoll).
- Cesium-137 (Cs-137) deposition is a good proxy for external gamma dose distribution on a relative basis. Therefore, Cs-137 deposition is a good proxy for distribution of the excess cancers due to external radiation. The two Cs-137 deposition maps show that most of the Cs-137 deposition in the United States was due to global (non-NTS) fallout. Hence, most of the estimated 11,000 cancer fatalities in the United States due to external [gamma radiation](#) would be due to tests conducted outside of the continental United States. States containing counties with the highest Cs-137 deposition include:

Arkansas	Iowa	Oregon	Utah
California	Missouri	Pennsylvania	Vermont
Idaho	New Hampshire	South Dakota	Washington
Indiana	North Carolina	Tennessee	Wyoming

Counties in other states throughout the eastern half of the United States received substantial Cs-137 deposition. A larger number of states have counties that received substantial thyroid doses of radioactive iodine from NTS tests.

- The CDC/NCI study included tests conducted between 1951 and 1962. This means that:
  - Chinese tests were not included (1964 to 1980)
  - French atmospheric tests after 1962 were not included. Hence all French atmospheric tests in the Pacific were not included. (France conducted atmospheric tests from 1960 until 1974.)
  - The pre-1951 tests in the Marshall Islands and the Soviet Union, the 1945 New Mexico test, and the Hiroshima and Nagasaki bombings were not included.
  - Ventings from underground tests in the United States or the Soviet Union were not included.
- Calculations for Alaska and Hawaii have not been done. Alaska may have had quite a bit of fallout from Novaya Zemlya. Hawaii may have had fallout from the Marshall Islands tests. These two states need to be included in future work. They were not included because of the limitations of this feasibility stage of the study. These two states would involve different sets of data. Fallout would also be expected in other places, for instance Canada.
- The two bone marrow dose maps show internal plus external dose. The table in the summary of the report shows average dose weighted over the country’s population. Some high fallout areas,



such as many of those in the West, had a relatively low population. Therefore, even though doses to the people living in these areas were relatively high, the role of these doses in a population-weighted average would be relatively small. So it is important to be careful in relating the numbers in the table to the dose and deposition data in the maps.

- The table below shows estimates of occurrence and fatalities for various types of cancers as a result of nuclear testing fallout.

Estimates of Cancer Occurrence and Cancer Fatalities in the United States from Global Atmospheric Nuclear Testing <sup>[1]</sup>

Type of cancer	Dose type	Deaths	Occurrence	Source
Thyroid	Internal	~2,500 <sup>[2]</sup>	50,000 <sup>[3]</sup>	IEER estimate NCI 1997
Leukemia	Internal	550	~1,000	CDC/NCI 2002 deaths estimate IEER for occurrence estimate
All radiogenic cancers	External	11,000	22,000	CDC/NCI 2002
All radiogenic cancers	Internal Effective Dose Equivalent <sup>[4]</sup>	~3,000	~6,000	IEER estimate CDC/NCI 2002 maps and tables
Total, rounded <sup>[5]</sup>		~17,000	~80,000	

Full sources referenced are:

- NCI 1997: National Cancer Institute, *Estimate Exposures and Thyroid Doses Received by the American People from Iodine-131 from Nevada Nuclear-Bomb Tests*. (Bethesda, Maryland: NCI), 1997. Online at <http://www.cancer.gov/i131/fallout/contents.html>
- CDC/NCI 2002: *Progress Report to Congress: A Feasibility Study of the Health Consequences to the American Population of Nuclear Weapons Test Conducted by the United States and Other Nations*, prepared by the Centers for Disease Control and Prevention and the National Cancer Institute, August 2001. (Obtained by IEER in February 2002.) [The official report and additional information are available on IEER's web site.](#)

## Fallout Maps (provided to IEER by CDC in February 2002)

- [Locations of sites having greater than one megaton total tests conducted prior to 1963](#)
- [Preliminary estimates of total radiation dose to red bone marrow of children born 1 January 1951 from Nevada Test Site and global fallout for all radionuclides](#)
- [Total \(external + internal\) dose to red bone marrow of an adult from global fallout](#)
- [Total \(external + internal\) dose to red bone marrow of an adult from Nevada Test Site tests](#)
- [Cesium-137 deposition density due to global fallout](#)
- [Cesium-137 deposition density due to Nevada Test Site tests](#)



Notes:

1. 48 contiguous states only, based on cumulative exposures between 1951 and 2000, does not account for all nuclear tests as explained above [? Return](#)
2. Estimated by IEER by assuming a 5% mortality rate from thyroid cancer. [? Return](#)
3. Rounded best estimate of 11,000-212,000 estimated range, obtained by taking geometric mean. [? Return](#)
4. From radionuclides such as carbon-14, [tritium](#), cesium-137. [? Return](#)
5. Rounded to one or two significant figures as indicated. [? Return](#)