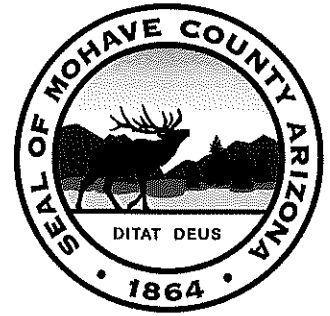


MOHAVE COUNTY BOARD of SUPERVISORS

P.O. Box 7000
Website – www.mohavecounty.us

700 West Beale Street

Kingman, Arizona 86402-7000
TDD - (928) 753-0726



District 1
Travis Lingenfelter
(928) 753-0722

District 2
Hildy Angius
(928) 758-0713

District 3
Buster D. Johnson
(928) 453-0724

District 4
Jean Bishop
(928) 753-8618

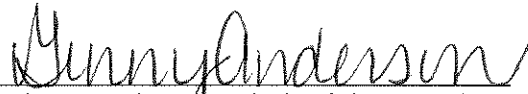
District 5
Ron Gould
(928) 758-0739

County Administrator/County Engineer
Sam Elters
Telephone (928) 753-0729

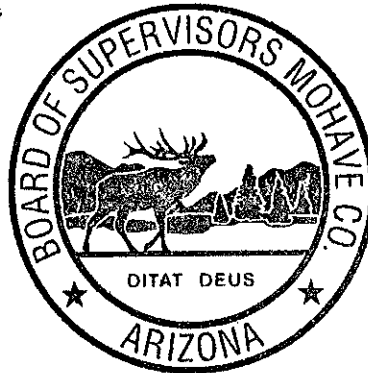
Clerk of the Board
Ginny Anderson
Telephone (928) 753-0731

CERTIFICATION

I, Ginny Anderson, Clerk of the Board of Supervisors of Mohave County, hereby certify that the attached Mohave County Board of Supervisors Resolution Nos 2015-014, 2015-145, 2016-146, 2016-043, and 2019-010 are a full, true and correct copy of the original on file in my, Mohave County, Arizona, as approved by the Mohave County Board of Supervisors.


Ginny Anderson, Clerk of the Board

3/19/2021
Date



RESOLUTION NO. 2015-014

A RESOLUTION RECOGNIZING JANUARY 27, 2015 AS A NATIONAL DAY OF REMEMBRANCE FOR AMERICAN DOWNWINDERS AND STRONGLY URGING AN AMENDMENT TO THE RADIATION EXPOSURE SCREENING AND EDUCATION PROGRAM (RECA) THAT PROVIDES FOR THE ADDITION OF MOHAVE COUNTY AS A COVERED AREA

WHEREAS, the Board of Supervisors met in Regular Session this 20th day of January 2015; and

WHEREAS, Mohave County hereby recognizes January 27, 2015 as a National Day of Remembrance for American Downwinders; and

WHEREAS, on January 27, 1951, the first of years of nuclear weapons tests was conducted at a site known as the Nevada Proving Grounds, located approximately 65 miles northwest of Las Vegas, Nevada; and

WHEREAS, the Atomic Energy Commission assured people living near test sites that testing would not occur without adequate assurance of public safety; and

WHEREAS, many Mohave County residents worked and lived downwind from nuclear testing sites and were adversely affected by the radiation exposure generated by the above ground nuclear weapons testing that occurred in Nevada; and

WHEREAS, with the implementation and subsequent amendments to RECA many parts of Mohave County were overlooked in determination of covered areas when counties further east and southeast were deemed eligible; and

WHEREAS, findings of Arizona's Radiation Regulatory Agency concluded that the Rads per individual to the thyroid in Mohave County were in some cases three times higher than those found in other Arizona counties that are covered areas; and

NOW, THEREFORE, BE IT RESOLVED that the County of Mohave does hereby urge our Congressional Delegation to develop legislation that would amend the Radiation Exposure Screening and Education Program to provide for the addition of all of Mohave County as a covered area.

PASSED, APPROVED and ADOPTED this 20th day of January, 2015.

MOHAVE COUNTY BOARD OF SUPERVISORS

St S M M

Steven M. Anderson

ATTEST:

Ginny Anderson
Ginny Anderson, Clerk of the Board



RESOLUTION NO. 2015-145

A RESOLUTION IN SUPPORT OF CONGRESSMAN GOSAR'S BIPARTISAN BILL TO ENSURE JUSTICE FOR DOWNWINDERS EXPOSED TO GOVERNMENT RADIATION TESTING.

WHEREAS, the Board of Supervisors met in Regular Session this 8th day of September, 2015, and;

WHEREAS, on January 27, 1951, the first of years of nuclear weapons tests was conducted at a site known as the Nevada Proving Grounds, located approximately 65 miles northwest of Las Vegas; and

WHEREAS, the Atomic Energy Commission assured people living near test sites that testing would not occur without adequate assurance of public safety; and

WHEREAS, many Mohave County residents worked and lived downwind from nuclear testing sites and were adversely affected by the radiation exposure generated by the above ground nuclear weapons testing that occurred in Nevada; and

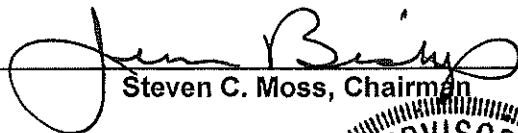
WHEREAS, with the implementation and subsequent amendments to RECA many parts of Mohave County were overlooked in the determination of covered areas when counties further east and southeast were deemed eligible; and

WHEREAS, findings of Arizona's Radiation Regulatory Agency concluded that the Rads per individual to the thyroid in Mohave County were in some cases three times higher than those found in other Arizona counties that were covered areas; and

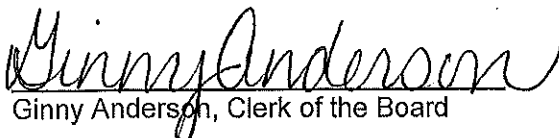
NOW, THEREFORE, BE IT RESOLVED, that the Mohave County Board of Supervisors does hereby urge our Congressional Delegation to pass Congressman Gosar's Bill H.R. 3345

PASSED, APPROVED and ADOPTED this 8th day of September, 2015

MOHAVE COUNTY BOARD OF SUPERVISORS


Steven C. Moss, Chairman

ARREST:


Ginny Anderson, Clerk of the Board



RESOLUTION NO. 2016-043

A RESOLUTION REQUESTING SUPPORT OF CONGRESSMAN GOSAR'S BIPARTISAN BILL H.R. 3345 TO ENSURE JUSTICE FOR DOWNWINDERS EXPOSED TO GOVERNMENT RADIATION TESTING.

WHEREAS, the Board of Supervisors met in Regular Session this 4th day of April, 2016, and;

WHEREAS, on January 27, 1951, the first of years of nuclear weapons tests was conducted at a site known as the Nevada Proving Grounds, located approximately 65 miles northwest of Las Vegas; and

WHEREAS, the Atomic Energy Commission assured people living near test sites that testing would not occur without adequate assurance of public safety; and

WHEREAS, many Mohave County residents worked and lived downwind from nuclear testing sites and were adversely affected by the radiation exposure generated by the above ground nuclear weapons testing that occurred in Nevada; and

WHEREAS, with the implementation and subsequent amendments to RECA many parts of Mohave County were overlooked in the determination of covered areas when counties further east and southeast were deemed eligible; and

WHEREAS, findings of Arizona's Radiation Regulatory Agency concluded that the Rads per individual to the thyroid in Mohave County were in some cases three times higher than those found in other Arizona counties that were covered areas; and

NOW, THEREFORE, BE IT RESOLVED, that the Mohave County Board of Supervisors does hereby urge Congressman David Schweikert, Congressman Matt Salmon and Congresswoman Martha McCally to sign onto Congressman Gosar's Bill H.R. 3345 to amend the Radiation Exposure Compensation Act expanding the eligibility boundaries to ensure justice for Downwinders exposed to government radiation testing.

PASSED, APPROVED and ADOPTED this 4th day of April, 2016.

MOHAVE COUNTY BOARD OF SUPERVISORS


Jean Bishop, Chairman

ATTEST:


Ginny Anderson, Clerk of the Board



RESOLUTION NO. 2016- 146

WHEREAS, the Board of Supervisors of Mohave County met in regular session on this 7th day of November, 2016, and

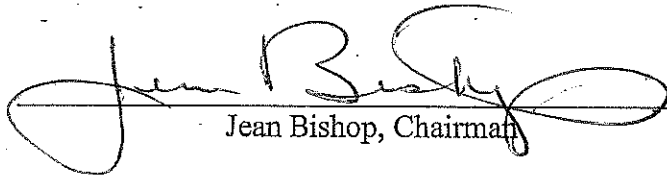
WHEREAS, in compliance with Arizona Revised Statutes 48-1012 (E), the Board of Supervisors, by resolution, cancels the November 15, 2016 election for the office of Board of Directors of the Golden Shores Water Conservation District and appoint those persons to office who legally filed nomination papers in the time prescribed by statute.

Golden Shores Water Conservation District:

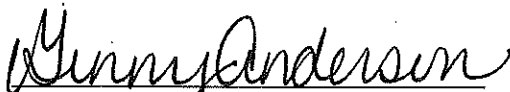
Imogene Snyder

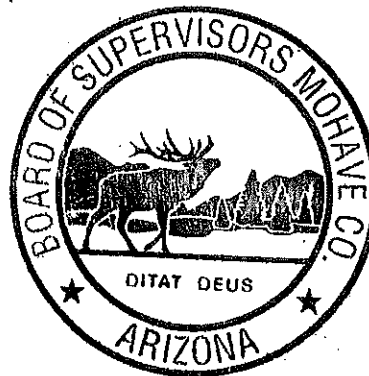
PASSED, APPROVED AND ADOPTED this 7th day of November, 2016.

MOHAVE COUNTY BOARD OF SUPERVISORS


Jean Bishop, Chairman

ATTEST:


Ginny Anderson, Clerk of the Board



RESOLUTION NO. 2019-010

A RESOLUTION RECOGNIZING JANUARY 27, 2019 AS A NATIONAL DAY OF REMBERENCE FOR AMERICAN DOWNWINDERS AND STRONGLY URGING AN AMENDMENT TO THE RADIATION EXPOSURE SCREENING AND EDUCATION PROGRAM (RECA) THAT PROVIDES FOR THE ADDITION OF MOHAVE COUNTY AS A COVERED AREA.

WHEREAS, the Board of Supervisors met in Regular Session this 22nd day of January 2019; and

WHEREAS, Mohave County hereby recognizes January 27, 2019 as a National Day of Remembrance for American Downwinders; and

WHEREAS, on January 27, 1951, the first of years of nuclear weapons tests was conducted at a site known as the Nevada Proving Grounds, located approximately 65 miles northwest of Las Vegas, Nevada; and

WHEREAS, the Atomic Energy Commission assured people living near test sites that testing would not occur without adequate assurance of public safety; and

WHEREAS, many Mohave County residents worked and lived downwind from nuclear testing sites and were adversely affected by radiation exposure generated by the above ground nuclear weapons testing that occurred in Nevada; and


WHEREAS, with the implementation and subsequent amendments to RECA many parts of Mohave County were overlooked in determination of covered areas when counties further east and southeast were deemed eligible; and

WHEREAS, findings of Arizona's Radiation Regulatory Agency concluded that the Rads per individual to the thyroid in Mohave County were in some cases three times higher than those found in other Arizona counties that are covered areas; and


NOW, THEREFORE, BE IT RESOLVED that the County of Mohave does hereby urge our Congressional Delegation to develop legislation that would amend the Radiation Exposure Screening and Education Program to provide for the addition of all of Mohave County as a covered area.

PASSED, APPROVED and ADOPTED this 22nd day of January, 2019.

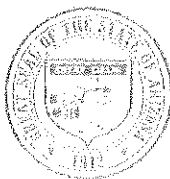
MOHAVE COUNTY BOARD OF SUPERVISORS


Hildy Angius, Chairman

ATTEST:


Ginny Anderson, Clerk of the Board





STATE OF ARIZONA

JANET NAPOLITANO
GOVERNOR

OFFICE OF THE GOVERNOR
1700 WEST WASHINGTON STREET, PHOENIX, AZ 85007

MAIN PHONE: 602-542-4331
FACSIMILE: 602-542-7601

April 13, 2005

The Honorable James P. Weiers
Speaker of the House
Arizona State Legislature
1700 West Washington
Phoenix, AZ 85007

Dear Speaker Weiers:

Attached is a report from the Arizona Radiation Regulatory Agency Director regarding the Radiation Exposure Compensation Act (RECA) and its application to Mohave County, Arizona. As presently written, the RECA does not apply to the portions of Mohave County south of the Colorado River. This creates an inequity for a county that experienced greater exposures from the radioactive iodine that was released by the prior nuclear testing than other areas that were compensated by the RECA such as Gila and Yavapai Counties. Therefore I have asked the Arizona Congressional Delegation to support the inclusion of all of Mohave County Arizona in the RECA. I invite you to join me in this effort.

In addition, many of the Mohave County citizens are concerned that the Nevada Test Site will again be utilized for nuclear weapon testing. They believe they have borne the brunt of the risks of the testing of nuclear weapons and do not believe they should again be exposed to those risks.

I thank you for your attention to these issues that affect our constituents.

Yours very truly,

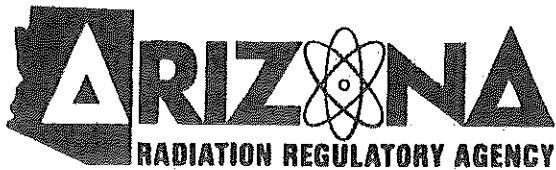
A handwritten signature in black ink that reads "Janet Napolitano".

Janet Napolitano
Governor

RECEIVED

APR 14 2005

SPEAKER'S OFFICE



Janet Napolitano
Governor

Aubrey V. Godwin
Director

4814 South 40th Street

Phoenix, Arizona 85040-2940

(602) 255-4845
Fax (602) 437-0705

March 10, 2005

Honorable Janet Napolitano
Governor
State of Arizona
1700 West Washington Street
Phoenix, AZ 85007

Dear Governor Napolitano;

Transmitted herewith is a copy of my report on the current situation in Mohave County regarding the radiation exposure and compassionate payments by the Federal Government. As you will note from the report, the lower portion of Mohave County is not eligible for the compassionate payments even though the persons living in this area were exposed to higher levels of radioactive iodine than the persons living in Gila County who can receive compassionate payments.

I respectfully suggest that copies of this report be made available to the Arizona Congressional Delegation, the U. S. Senators from California, the Mohave County Legislative Delegation, and the Mohave County Supervisors. In addition, I suggest copies be made available to the following non-elected officials or individuals, the National Academy of Science, the U.S. Attorney General and all those who testified at the hearing.

Also submitted with this report as additional information are the attendance registration list, a DVD copy of the comments offered by the citizens and a memorial book prepared for you by the Downwinders.

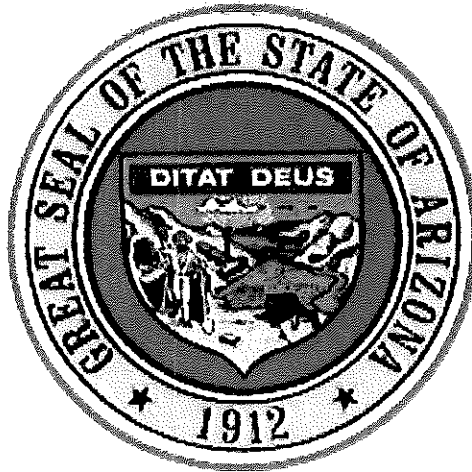
In view of the concerns of the local citizens, I suggest we encourage the passage of a Memorial by the Arizona Legislature asking Congress not to authorize the restart of testing of nuclear weapons at the Nevada Test Site. Several individuals expressed concern that such testing may be reinstated at the site and such activity might release still more radioactive material onto their homes.

Sincerely

A handwritten signature in black ink, appearing to read "Aubrey V. Godwin".

Aubrey V. Godwin, M.S., C.H.P.
Director

Enc.
AVG:avg



**REPORT TO GOVERNOR JANET NAPOLITANO
REGARDING THE EXPOSURE OF CITIZENS IN MOHAVE
COUNTY TO FALLOUT FROM THE TESTING OF NUCLEAR
WEAPONS AT THE NEVADA TEST SITE**

RECEIVED

APR 14 2005

SPEAKER'S OFFICE

PURPOSE . This report is to advise the Governor and other appropriate elected or appointed officials of the current radiation exposure situation in Mohave County Arizona. Of primary interest is how the Radiation Exposure Compensation Act (RECA) considers the exposures of Mohave County citizens. Included as a part of this report are the comments of concerned citizens of Arizona and California made at the "Director's Hearing" on February 4, 2005.

OBJECTIVES. This report indicates that within the State of Arizona there is an inequitable treatment of the Mohave citizenry regarding their exposure to weapons testing fallout as shown by the U.S. Governments own exposure calculations.

BACKGROUND INFORMATION. The following is a copy of the information prepared by the U. S. Department of Justice on the RECA. See <http://www.usdoj.gov/civil/torts/reca/about.htm>.

"On October 5, 1990, Congress passed the Radiation Exposure Compensation Act ("RECA" or "the Act"), 42 U.S.C. § 2210 note, providing for compassionate payments to individuals who contracted certain cancers and other serious diseases as a result of their exposure to radiation released during above-ground nuclear weapons tests or as a result of their exposure to radiation during employment in underground uranium mines. The 1990 Act provided fixed payments in the following amounts: \$50,000 to individuals residing or working "downwind" of The Nevada Test Site; \$75,000 for workers participating in above-ground nuclear weapons tests; and \$100,000 for uranium miners. Implementing regulations were issued by the Department of Justice and published in the Federal Register on April 10, 1992, establishing procedures to resolve claims in a reliable, objective, and non-adversarial manner, with little administrative cost to the United States or to the person filing the claim. Revisions to the regulations, published in the Federal Register on March 22, 1999, served to greater assist claimants in establishing entitlement to an award.

On July 10, 2000, Pub. L. 106-245, the Radiation Exposure Compensation Act Amendments of 2000 ("the 2000 Amendments") was passed. Introduced by Senator Hatch on August 5, 1999, the Amendments were one of many bills introduced in the 106th Congress with the intent to amend the existing law. Most significantly, the 2000 Amendments added two new claimant categories (uranium mill workers and ore transporters), provided additional compensable illnesses, lowered the radiation exposure threshold for uranium miners, included above-ground miners within the definition of "uranium miner," modified medical documentation requirements, and removed certain lifestyle restrictions. It also added additional geographic areas to the downwinder claimant category. On November 2, 2002, the President signed the "21st Century Department of Justice Appropriation Authorization Act" (P.L. 107-273). Contained in the law were several provisions relating to RECA. While most of these amendments are "technical" in nature, some affect eligibility criteria and revise claims adjudication procedures. The following points describe the major impact of the "technical amendments":

- the "technical amendments" reinserted a previously covered geographical area for downwinder claimants that had erroneously been removed by the 2000 Amendments;
- clarifies requirement that lung cancer must be "primary" for all claimant categories;
- uranium miners provided the option of establishing exposure to 40 working level months of radiation or establishing employment in a mine for one year;
- all uranium workers diagnosed with lung cancer no longer required to submit evidence of a non-malignant respiratory disease; (Seemingly a draftsmanship error in the 2000 Amendments, the "technical amendments" eliminated the requirement that in cases where the claimant is living, a claimant with lung cancer must submit the medical documentation required for proof of a "non-malignant respiratory disease." This requirement had the unintended effect of precluding most lung cancer claimants -- who may not suffer from a non-malignant respiratory disease -- from establishing eligibility for compensation.)

RECA Claimant Categories

Uranium Miners. A payment of \$100,000 is available to eligible individuals employed in aboveground or underground uranium mines located in Colorado, New Mexico, Arizona, Wyoming, South Dakota, Washington, Utah, Idaho, North Dakota, Oregon, and Texas at any time during the period beginning on January 1, 1942, and ending on December 31, 1971. Additional mining states may be included for compensation upon application.

- Exposure.** The claimant must have been exposed to 40 or more working level months (WLMs) of radiation while employed in a uranium mine or worked for at least one year in a uranium mine during the relevant time period.
- Disease.** Compensable diseases include primary lung cancer and certain nonmalignant respiratory diseases.

Uranium Mill Workers. A payment of \$100,000 is available to eligible individuals employed in uranium mills located in Colorado, New Mexico, Arizona, Wyoming, South Dakota, Washington, Utah, Idaho, North Dakota, Oregon, and Texas at any time during the period beginning on January 1, 1942, and ending on December 31, 1971.

- Exposure.** The claimant must have worked in a uranium mill for at least one year during the relevant time period.
- Disease.** Compensable diseases include primary lung cancer, certain nonmalignant respiratory diseases, renal cancer, and other chronic renal disease including nephritis and kidney tubal tissue injury.

Ore Transporters. A payment of \$100,000 is available to eligible individuals employed in the transport of uranium ore or vanadium-uranium ore from mines or mills located in Colorado, New Mexico, Arizona, Wyoming, South Dakota, Washington, Utah, Idaho, North Dakota, Oregon, and Texas at any time during the period beginning on January 1, 1942, and ending on December 31, 1971.

- A. **Exposure.** The claimant must have transported ore for at least one year during the relevant time period.
- B. **Disease.** Compensable diseases include primary lung cancer, certain nonmalignant respiratory diseases, renal cancer, and other chronic renal disease including nephritis and kidney tubal tissue injury.

Downwinders. A payment of \$50,000 is available to an eligible individual who was physically present in one of the affected areas downwind of the Nevada Test Site during a period of atmospheric nuclear testing, and later contracted a specified compensable disease.

- A. **Exposure.** The claimant must have lived or worked downwind of atmospheric nuclear tests in certain counties in Utah, Nevada and Arizona for a period of at least two years during the period beginning on January 21, 1951, and ending on October 31, 1958, or, for the period beginning on June 30, 1962, and ending on July 31, 1962. The designated affected areas are: in the State of Utah, the counties of Beaver, Garfield, Iron, Kane, Millard, Piute, San Juan, Sevier, Washington, and Wayne; in the State of Nevada, the counties of Eureka, Lander, Lincoln, Nye, White Pine, and that portion of Clark County that consists of townships 13 through 16 at ranges 63 through 71; and in the State of Arizona, the counties of Apache, Coconino, Gila, Navajo, Yavapai, and that part of Arizona that is north of the Grand Canyon.
- B. **Disease.** After such period of physical presence, the claimant must have contracted one of the following specified diseases: leukemia (other than chronic lymphocytic leukemia), multiple myeloma, lymphomas (other than Hodgkin's disease), and primary cancer of the thyroid, male or female breast, esophagus, stomach, pharynx, small intestine, pancreas, bile ducts, gall bladder, salivary gland, urinary bladder, brain, colon, ovary, or liver (except if cirrhosis or hepatitis B is indicated), or lung.

Onsite Participants. A payment of \$75,000 is available to eligible individuals who participated onsite in a test involving the atmospheric detonation of a nuclear device, and later developed a specified compensable disease.

- A. **Exposure.** The claimant must have been present "onsite" above or within the official boundaries of the Nevada, Pacific, Trinity, or South Atlantic Test Sites at any time during a period of atmospheric nuclear testing and must have "participated" during that time in the atmospheric detonation of a nuclear device.

Disease. After the onsite participation, the claimant contracted one of the following specified diseases: leukemia (other than chronic lymphocytic leukemia), lung cancer, multiple myeloma, lymphomas (other than Hodgkin's disease), and primary cancer of the thyroid, male or female breast, esophagus, stomach, pharynx, small intestine, pancreas, bile ducts, gall bladder, salivary gland, urinary bladder, brain, colon, ovary, or liver (except if cirrhosis or hepatitis B is indicated), or lung."

ADDITIONAL BACKGROUND INFORMATION. The U.S. Atomic Energy Commission attempted to limit the tests to weather conditions that would not carry the major fallout cloud into either California or the Las Vegas area. As noted in the

testimony given in the hearing, they were only partially successful. In most cases the major portion of the radioactive material was lifted quite high, greater than 20,000 feet, where it was carried to the northeast of the Nevada Test Site. These materials ultimately fell out or were rained out thousands of miles from the tests, see the national map at the end of the Appendix. But, clearly detectable radiation was released into Arizona as shown by the Governments' own data reproduced in the Appendix.

Cancer data from the State of Arizona needs extensive refinement to be of any value. When comparing the specific cancer mortality data with the reported exposures there is no correlation, probably due to the other contributing factors which also cause these same cancers. Selected mortality data may appear to give a correlation but that does not meet the scientific test of validity. A correlation of the cancer mortality data to the radiation exposures may exist if the other contributors are removed from the data. Some of the interferences are; the high levels of uranium in the ground waters in some areas of Mohave County, the uses of pesticides on the cotton fields, and chemical exposures in the workplace.

CITIZENS COMMENTS. On February 4, 2005, Robert H. Cope, at the direction of the Arizona Radiation Regulatory Agency Director, conducted a public meeting or hearing to receive the comments of the Mohave County citizens regarding the current division of the County in the compassionate payments to sickened individuals. A total of 50 individual offered comments.

These commenters were supportive of program changes to include all of Mohave County in the RECA compassionate payment program. They were at a loss to know why the County was divided in the first place. The data attached as Appendix, demonstrates that the presently not included areas of Mohave County have higher exposure than two counties, Gila and Yavapai, which are included. This is clearly an inequity to the citizens of Mohave County. Further, many indicate opposition to the idea that nuclear weapon testing should be resumed at the Nevada Test Site.

Several commenters also asked that consideration be give to expanding the list of diseases to include other cancers they suspect may also be caused by radiation exposure. The one theme that permeated the comments of all that participated in the hearing, was the human pain and suffering caused by cancer. In these cases, most believed the cancers were caused by the radiation exposures from the fallout. Vivid descriptions of family members shattered lives after contracting cancer, the difficulties with insurance coverage, the lack of local treatment facilities and the agony of watching a loved one slowly waste away and die are not translatable to a formal report.

One commenter stated, "The government wouldn't hurt us.." was the way most viewed the situation at the time they were exposed. Nevertheless, several commenters indicated they were asked to wear radiation detection equipment or had radiation measurements made of them or their surroundings during these weapon tests. This implies that the Government had some idea that the fallout may have adverse consequences on the

population. Several told of watching the beautiful colors associated with the tests, hearing the rumble of the blast some twenty minutes later and then watch and in some cases playing in the dust that would fall.

POLICY ISSUES. The Radiation Exposure Compensation Act is a balancing of several competing principles.

1. Concern for the citizenry's health and well being
2. How to equate the damages when the damage is a statistical calculation and there is no way to say this disease was specifically caused by this action, but only the risk of having the disease was increased by some degree.
3. Should all who had the increased risk be compensated or only those who became ill.
4. Total money available to pay compensation. The problem is national, all states have an increase in radiation exposure due to these tests.
5. The exposures, at the time were viewed as justified to save our way of life. How does this compare to those who were injured or killed in battle or in making ammunition.

Clearly, since Congress has made the decision that compassionate payments are appropriate for certain areas of Arizona, it is an inequity to not provide the same payments in areas with the same or higher risk (i.e. exposure) as those that are being compensated. In the case of Mohave County, the entire County should be included for compassionate payments under the provisions of the Radiation Exposure Compensation Act.

In addition, a review of the diseases covered by the Radiation Compensation Act should be included since there appears to be some possibility that there is an increase in other forms of cancer in the area.

Further, in light of this experience, the local citizens are adamant that no additional nuclear weapon testing should take place at the Nevada Test Site.

APPENDIX

Reported iodine exposures in Arizona

The National Institutes of Health, National Cancer Institute made estimates of the per capita exposure to the thyroid for each county in the continuous United States. For Arizona the reported data in rads follows.

County	Geometric mean	Standard deviation	Effectuated population
Apache*	2.0	1.9	28,902
Cochise	0.2	1.7	41,498
Coconino 1*	3.7	2.3	611
Coconino 2*	3.6	2.3	10,346
Coconino 3*	0.6	1.9	20,586
Gila*	0.2	1.7	24,837
Graham	0.2	1.7	13,438
Greenlee	0.2	1.7	12,256
Maricopa	0.2	1.8	472,764
Mohave 1*	3.3	2.0	227
Mohave 2*	4.7	2.1	227
Mohave 3	0.6	1.9	6,291
Mohave 4	0.7	1.9	1,441
Navajo*	1.2	2.0	33,084
Pima	0.3	1.9	194,103
Pinal	0.2	1.8	51,473
Santa Cruz	0.3	1.8	9,968

Yavapai*	0.2	1.8	26,658
Yuma	0.2	2.1	35,756

*Counties or portions of county eligible for Downwinders compensation

Quoted below is the full executive summary of the study which presented the above data. The full report may be found at <http://rex.nci.nih.gov/massmedia/Fallout/contents.html>

**“National Cancer Institute
Study Estimating Thyroid Doses of I-131 Received by Americans From
Nevada Atmospheric Nuclear Bomb Test
Background**

Public Law 97-414, in part, directs the Secretary of Health and Human Services to "conduct scientific research and prepare analyses necessary to develop valid and credible methods to estimate the thyroid doses of Iodine-131 (131I) that are received by individuals from nuclear bomb fallout (and) to develop valid and credible assessments of the exposure to Iodine-131 that the American people received from the Nevada atmospheric nuclear bomb tests."

The National Cancer Institute was asked to respond to this mandate, and the present report was prepared for that purpose. The full study report, to be available as soon as possible, provides estimates of human exposure to and thyroid radiation doses from iodine-131 resulting from individual nuclear tests conducted at the Nevada Test Site (NTS).

Ninety nuclear tests released almost 99% of the total iodine-131 entering the atmosphere from the bomb tests conducted at the NTS. These ninety tests released about 150 million curies of iodine-131, mainly in the years 1952, 1953, 1955, and 1957. Some radioiodine was deposited everywhere in the United States, with the highest deposits immediately downwind of the NTS. The lowest deposits were on the west coast, upwind of the NTS. In the eastern part of the country, most of the deposited iodine-131 was associated with rain, while in the more arid west, dry deposition (where particles settle on the ground) prevailed. Because iodine-131 decays with an 8-day half-life, exposure to the released iodine-131 occurred primarily during the first two months following a test.

Estimating Exposure

Historical measurements of the amounts of radioactivity deposited and of a daily rainfall were used as the basis for the dose calculations whenever feasible. These historical measurements consisted of a simple collection of daily fallout on sticky paper (i.e., gummed film) made at the time of and during several days following most of the tests. The number and location of the monitoring stations across the United States varied with time but never exceeded 100. The collected fallout was measured daily for the amount of gross beta radioactivity present. The monitoring system was intended to determine where and when fallout occurred, but did not measure specific radionuclides. In other words, the system did not measure individually the amounts of different kinds of radioactivity, such as iodine-131, strontium-90, and cesium-137.

Reanalyses of these data together with the use of mathematical modeling, and the incorporation of precipitation data for each county during the time fallout clouds were over the United States, permitted estimates of iodine-131 deposition in each county for each day following each test. This reanalysis included: 1) the assessment of the collection efficiency of the gummed film for fallout collection; 2) the assessment of the efficiency of the radioactivity counting equipment, which varied from test series to test series; 3) accounting for the loss of volatile radionuclides during sample processing at the time of the original measurements; and 4) the use of more recently declassified and published characterization of the distribution and quantity of radionuclides in the fallout cloud produced by each test.

Measurements of the amount of radioactivity deposited were not available for 3 tests conducted in 1951, and for 6 tests conducted between 1962 and 1970. The latter six tests are thought to have led possibly to significant depositions of iodine-131 in the U.S. For these nine tests, atmospheric dispersion and deposition models were used to estimate the amount of iodine-131 deposited by county.

Regional data on consumption of pasture grasses by cows and on the transfer to milk of iodine-131 deposited on pasture grasses were used to estimate concentrations of iodine-131 in milk fresh from cows. These concentrations, together with milk distribution patterns in the 1950s, were used to estimate local concentrations of iodine-131 in the cows' milk available for human consumption throughout the country. (Milk consumed immediately after milking a family cow would have a higher concentration if iodine-131 than does milk processed and then consumed days after a cow was milked.) Finally, milk consumption rates, based upon diet surveys, were used to estimate the amounts of iodine-131 ingested by age group and by gender. The transfer of iodine-131 to people through the other exposure routes was similarly analyzed.

The overall average thyroid dose to the approximately 160 million people in the country during the 1950s was 2 rads. The uncertainty in this per capita dose is estimated to be a factor of 2, that is, the per capita dose may have been as small as 1 rad or as large as 4 rads, but 2 rads is the best estimate. The study also demonstrated that there were large variations in the thyroid dose received by subcategories of individuals. The primary factors contributing to this variation are county of residence, age at the time of exposure, and milk consumption patterns.

Scope of Study

The legislation called for the development of methods to estimate iodine-131 exposure to the American people, to assess thyroid doses from iodine-131 received by individuals across the country from the Nevada tests, and to assess the risk for thyroid cancer from these exposures. This study fulfills the first two of these requirements; other studies have and are fulfilling the third. The complete study report includes estimates of the cumulative average iodine-131 dose, by age and sex, to the thyroid for representative persons in each county after each test during the period when the nuclear tests were conducted in Nevada. Estimates of thyroid doses have been made for persons by age, sex, and source and quantity of milk consumed because milk was the source of most of the iodine-131 exposure for most people. Uncertainty is associated with the dose estimates developed by the study because the estimates are based on a small number of radiation

measurements made at the time of the tests and the study authors had to rely heavily on mathematical models to develop the estimates.

Estimating Individual Exposures

Geography

The importance of geographical location can be seen in Figure 1, which shows the overall per capita doses by county. In general, the highest per capita thyroid doses, in the range of 9 to 16 rads, were obtained in counties of western states located east and north of the NTS, such as Colorado, Idaho, Montana, South Dakota, and Utah. In many counties on or near the west coast, the border with Mexico, and parts of Texas and Florida, the per capita thyroid doses were lowest, in the range of less than 0.1 to 0.5 rad. By comparison, the average individual in the United States receives a thyroid dose of about 0.1 rad each year from exposure to cosmic rays and naturally occurring radioactivity, with relatively large variations from one location to another.

The counties with the highest estimated average doses are listed in Table 1. Individuals living in these five western counties were estimated to have a cumulative average dose of 12 to 16 rads. These were Meagher County, Montana, and Custer, Gem, Blaine, and Lemhi Counties in Idaho. The table lists another 20 counties, mostly in Montana, where cumulative individual doses were estimated to be in the range of 9 to 12 rads.

It should be noted that the exposure ranges for the counties in Table 2 and other ranges merge into one another, especially considering the uncertainties associated with all of these estimates. There are no sharp dividing lines between these ranges.

Age

The thyroid doses to individuals at a particular location were strongly dependent upon age at the time of exposure. Thyroid dose estimates for young children are uniformly higher than those for adults, assuming that individuals in particular geographic areas consumed milk from the same source at average rates for their age group. For any particular test, the thyroid doses for children between 3 months and 5 years of age exceeded the average per capita thyroid dose following that test by a factor of about 3 to 7 because of greater milk consumption and their smaller thyroid.

The date of birth and geographic residence of individuals also are strong determinants of the cumulative dose received from all tests. The variation in cumulative thyroid doses to individuals born at different times, each of whom lived in a single county and consumed cows' milk from local sources at average rates, is illustrated in Table 2. This can be considered a dose table for six typical families located in the identified counties throughout the testing period. The factors affecting the doses to parents are approximately independent of birth dates up to 1930; doses to adult men and women born prior to this time were nearly the same. Thyroid doses to children born about six months prior to three major test series (1952, 1953, and 1957) were substantially higher in general than the adult doses. The thyroid doses to teenagers would have been intermediate between those to small children and to adults. The last column shows doses to children born in 1958, which is the year when the last test series (but not the last individual tests) in the atmosphere took place at the NTS. Cumulative thyroid doses to most of the children born in later years are estimated to be less than 0.1 rad.

Diet, Particularly Milk Consumption

For most people, the major exposure route was the ingestion of cows' milk contaminated as the result of iodine-131 deposited on pasture grasses; other exposure routes such as the inhalation of contaminated air and the ingestion of contaminated leafy vegetables, goats' milk, cottage cheese, and eggs also were considered. For individuals within a particular age range, milk consumption can vary substantially. For example, surveys have shown that 10% to 20% of children between ages 1 and 5 do not consume cows' milk. Their doses were only about one tenth of those received by children who consumed fresh cows' milk at average rates for their age. Conversely, the milk consumption of 5% to 10% of individuals in the same age range was two to three times greater than the average and their thyroid doses were therefore proportionally larger. The type of milk consumed also is important. It is estimated that at that time about 20,000 individuals in the U.S. population consumed goats' milk. Thyroid doses to those individuals could have been 10 to 20 times greater than those to other residents of the same county who were the same age and sex and drank the same amount of cows' milk. Goats' milk concentrates iodine-131 more than cows' milk.

The foregoing examples illustrate that the thyroid dose received by any particular individual depends on his/her source of milk and dietary habits and thus may differ considerably from the group dose estimates. Furthermore, the person's total thyroid dose from all tests depends upon place of residence and age at the time of each test. Because of the very large number of variations in residence location, age, and dietary habits, it is not feasible to provide estimates of cumulative doses for individuals. However, detailed information is provided in the full report so that individual cumulative doses can be estimated based upon personal residence and dietary history.

Uncertainties and Model Validation

There are large uncertainties in the estimated thyroid doses given in the report because it is impossible to know all the information needed to determine exact doses. These uncertainties were assessed in two ways. First, calculated concentrations of iodine-131 were compared with the few historical measurements of iodine-131 in people and the environment that are available. Second, the uncertainties in the historical daily deposition data and in each of the factors used to estimate the transfer of iodine-131 to people's thyroids through the various exposure routes yielded an estimate of the total uncertainty. The uncertainty in the thyroid dose estimated for an individual is greater than the uncertainty in the overall average thyroid dose to the entire United States population. In general, the uncertainty of the thyroid dose from NTS iodine-131 for representative individuals is about a factor of 3, e.g., if the thyroid dose estimate for an individual is 3 rads, it will likely lie between 1 and 9 rads.

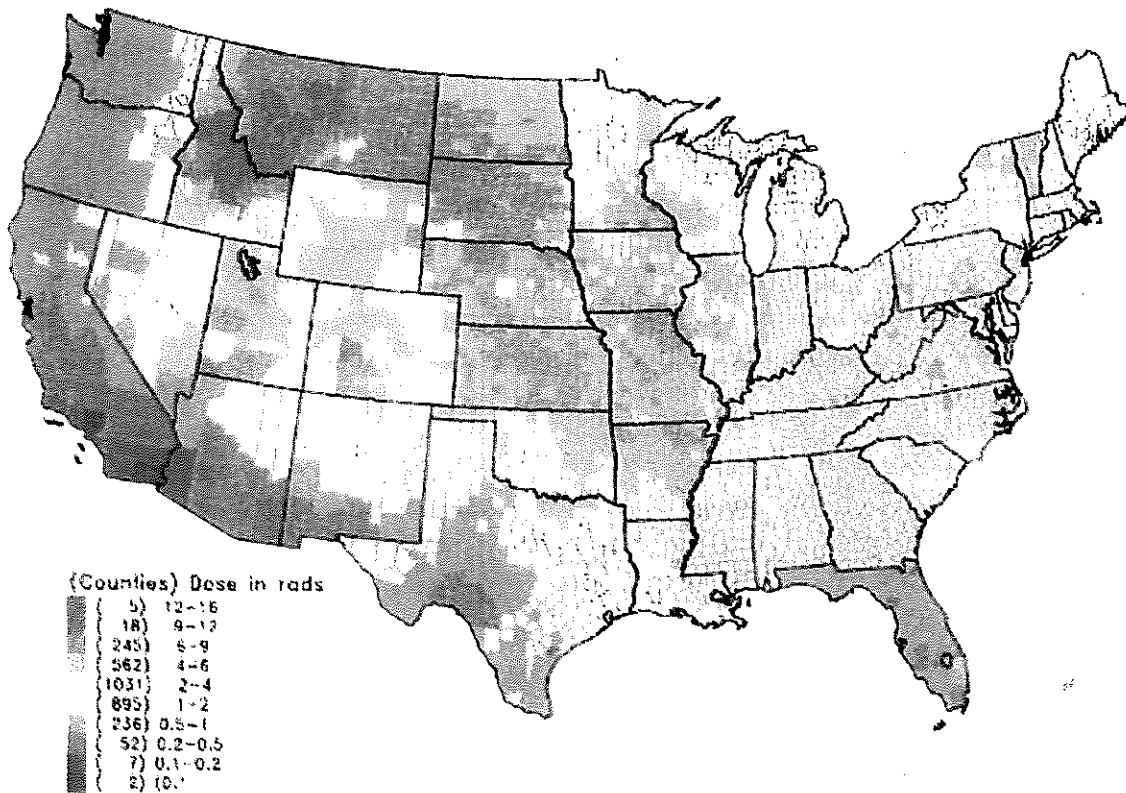
The results obtained from the mathematical models used in this study were compared with any data collected at the time of the tests in order to compare the findings of the modeling with those of the actual data collection. The comparisons also provide an estimate of the uncertainty attached to the calculated doses. As a result of these comparisons, a relatively good agreement was found between actual data and predictions made by the mathematical models. For example, independent analysis of urine samples volunteered by soldiers at Army bases throughout the United States following one of the test series showed iodine-131 dose levels consistent with doses predicted. However, it should be noted that the comparison between measured and predicted values required the

use of several assumptions, and there is no guarantee that the samples measured were representative of county averages.

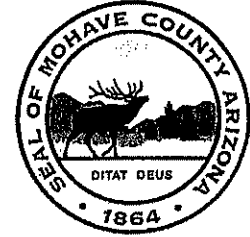
Information To Be Included in the Full Report

Thyroid dose estimates are given for representative individuals in specified age groups residing in each county of the contiguous United States. The report also contains extensive tables of information organized by test and by county so that individual radiation doses to the thyroid from iodine-131 can be estimated based upon personal residence and dietary histories. Thyroid doses from iodine-131 were estimated for 13 age categories, including the fetus, with adults subdivided by gender, in 3,071 counties of the contiguous United States, and for all periods of exposure. There are four consumption scenarios calculated for each category. The report's maps, tables, and formulas will allow local governments and other organizations to calculate dose estimates for individuals falling in these categories in their geographic region."

Per capita thyroid doses resulting from all exposures routes from all tests



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Chairman Jean Bishop Mohave County Supervisor District 4

Honorable

I was just a baby when atomic explosions filled the sky near my family home outside of Las Vegas, Nevada. It was in the early 50's when my family lived downwind from the government nuclear test sites and then later moved to Mohave County.

Between 1951 (my birth year) and 1963 the United States Government through the Atomic Energy Commission detonated hundreds of nuclear bombs near our home in the Nevada desert. It was a matter of National Security as the United States had just ended WWII by dropping 2 bombs on Japan. The U.S. and U.S.S.R. had just entered into the cold war and began a race to create the biggest nuclear bomb, but this race was also a matter of unacknowledged risk at the expense of the public. Over and over my parents were told the testing was safe as our family stood on the front porch and watched with pride. It was a fun patriotic time, a time to celebrate the advances of our country in order to protect our citizens. This is no longer a celebration; it is a devastating loss to tens of thousands of people.

Congress created a Radiation Exposure Compensation Act (RECA), a program that would provide partial restitution to individuals who developed illnesses after this radiation exposure but as you know, the act STILL does not include part of Clark County where the testing was located and the southern part of Mohave County which is directly downwind, even though the cancer rates are much higher in these areas. Mohave Downwinders have been hopeful that they would be included for decades. How sad it is that parts of Mohave County and Clark County have STILL not been included in the RECA. Radiation does not pick and choose where it lands and it did land in these counties!

Many of us have been touched by the aftermath of the government's choice to test nuclear weapons. Anyone who has lived in these counties for any length of time either knows someone who has battled cancer like myself or knows someone who has lost their life to cancer like many of my family and close friends.

As a Downwinder victim and a recent cancer survivor, I can testify that the amount of money for a Downwinder claim will never be able to make up for the loss of a family member but it can certainly help with the medical bill and other expenses associated with cancer which can be far worse than the disease itself.

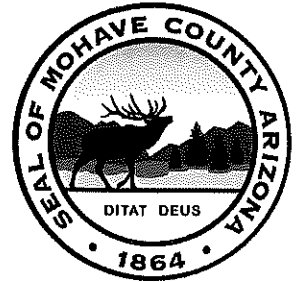
It is my sincere hope that the Mohave County citizens can once again celebrate when a wrong has been made right. We appreciate the efforts you will seek for compensation and recognition for Mohave County residents suffering from weapons testing radiation.

Best Regards,

Chairman Jean Bishop
Mohave County Supervisor
District 4

MOHAVE COUNTY BOARD of SUPERVISORS

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I have lived in Mohave County the majority of my life. My professional career has been spent serving the citizens of Mohave County in both law enforcement for over 30 years and now as an elected County Supervisor in District-4.

As a County Supervisor, I currently serve on the following committees and boards:

- County Supervisors, executive board, 1st V-President
- County Supervisors Association, past LPC Member
- County Supervisors Association, past Chair Medium Caucus
- Mohave County Board of Health, President
- Kingman Food Bank, Director
- Mohave County Housing Authority
- Mohave/La Paz Local Workforce Investment Board
- WACOG Senior Site Council member
- Regional Council on Aging Members and Alternatives
- Mohave/La Paz Local Workforce Investment Area Youth Council
- Fill the Gap Committee member