

Exposure of Military Personnel from Nuclear Weapon Test at Nevada Test Site

Background

Eighty atmospheric nuclear weapon development tests were conducted at the Nevada Test Site during the period 1951-1958. Many tests were utilized by military units and civil defense organizations to conduct troop maneuvers and other training exercises. The participating military units were stationed at camp Desert Rock. It is estimated that more than one hundred thousand military personnel were present at NTS in the course of these tests.

Shot "Smokey" involved a major troop exercise conducted on August 31, 1957. It involved simulated combat operations and studies of human behavior under nuclear warfare conditions. The weapon had a yield of 44KT. It is believed that approximately 2500 personnel were involved.

Findings

Approximately 6 months ago several news reports claimed that there were indications of an increased incidence of leukemia among personnel that had participated in the Smokey event. These claims were based on findings by Dr. G. Caldwell of the Center for Disease Control, HEW, Atlanta.

Dr. Caldwell, a physician interested in epidemiological aspects of leukemia, observed that one or two leukemia cases that were included in his study had occurred in persons present during the Smokey event. Subsequently, and through the help of news media, he collected a list of approximately 1000 persons claiming to have been present at this event. According to Dr. Caldwell there may be as many as ten cases of leukemia in this group.

Evaluation

1. The natural incidence of leukemia in the U. S. is about 50-100 per 1,000,000 per year. The absolute radiation risk, mainly based on experiences in the exposed Japanese populations is 1-2 cases per year per rad per million for exposed adults. The incidence as reported by Dr. Caldwell of 10 per 1000 (even if occurred in a 10-year period) would extrapolate radiation exposures at NTS of 500 rads or higher. At such doses clinical symptoms of radiation sickness and a significant number of deaths can be expected. This is not supported by reports on the Smokey test.

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2. Only an increased incidence of myloid leukemia was observed in the Japanese; lymphoid leukemia thus far has not been associated with radiation exposure. Dr. Caldwell's findings appear to indicate that exposure is associated with both lymphoid and myeloid leukemia.
3. Dr. Caldwell is assuming that persons who claim they were present at NTS for the Smokey test received radiation exposure. No effort has been made or planned to determine whether the study population were exposed.
4. It cannot be ruled out that by looking for leukemias, Dr. Caldwell has found most cases of leukemia that occurred in this population. If that were the case, the incidence of myeloid leukemia of three in this population is about the number one could expect from natural causes.

#### Present Status

1. DOD, Army, is in the process of constructing a roster of military personnel that participated in the Smokey test, presumably to be used for a follow up of this population.
2. Discussions between General Council of DOD and ERDA are in progress; for exchange of exposure information viz a viz the Privacy Act.
3. ERDA is studying the feasibility of conducting an epidemiological studies of military and civilian personnel exposed at NTS.

#### Conclusion

There is a serious discrepancy between the observed incidence and type of leukemia in large populations that have been studied and the population studied by Dr. Caldwell. Further studies of these groups have to be done to determine the validity of his finding.