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Development of the Town Data Base: Estimates of Exposure Rates and Times of Fallout Arrival Near the Nevada Test Site

by

Carol B. Thompson and Richard D. McArthur
Water Resources Center
Desert Research Institute
University and Community College System of Nevada

and

Stan W. Hutchinson
Mead Johnson Nutritional Group
Evansville, Indiana

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Carol B. Thompson and Richard D. McArthur
Water Resources Center, Desert Research Institute
University and Community College System of Nevada
P.O. Box 19040, Las Vegas, Nevada 89132-0040
and
Stan W. Hutchinson
Mead Johnson Nutritional Group
Evansville, Indiana 47721

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ABSTRACT

As part of the U.S. Department of Energy's Off-Site Radiation Exposure Review Project, the time of fallout arrival and the H+12 exposure rate were estimated for populated locations in Arizona, California, Nevada, and Utah that were affected by fallout from one or more nuclear tests at the Nevada Test Site. Estimates of exposure rate were derived from measured values recorded before and after each test by fallout monitors in the field. The estimate for a given location was obtained by retrieving from a data base all measurements made in the vicinity, decay-correcting them to H+12, and calculating an average. Estimates were also derived from maps produced after most events that show isopleths of exposure rate and time of fallout arrival. Both sets of isopleths on these maps were digitized, and kriging was used to interpolate values at the nodes of a 10-km grid covering the pattern. The values at any location within the grid were then estimated from the values at the surrounding grid nodes. Estimates of dispersion (standard deviation) were also calculated. The Town Data Base contains the estimates for all combinations of location and nuclear event for which the estimated mean H+12 exposure rate was greater than three times background. A listing of the data base is included as an appendix. The information was used by other project task groups to estimate the radiation dose that off-site populations and individuals may have received as a result of exposure to fallout from Nevada nuclear tests.

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