

VOL. 90, NO. 6, JUNE 2006
SUPPLEMENT TO

HEALTH PHYSICS

THE RADIATION SAFETY JOURNAL



The Official Journal of
the Health Physics Society



Abstracts of Papers
Presented at the
Fifty-first Annual
Meeting of the
Health Physics Society
Providence, RI

www.health-physics.com

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TAM-A.7

CHARACTERIZATION OF WORLD WAR II OPERATIONS IN D BUILDING AT LOS ALAMOS TO SUPPORT ESTIMATION OF AIRBORNE PLUTONIUM RELEASES. T. Widner,¹ J. Knutsen,¹ J. Shonka,² J. O'Brien,² R. Burns,² J. Buddenbaum,³ S. Flack¹ (¹ChemRisk, Inc., 25 Jessie Street at Ecker Square, Suite 1800, San Francisco, CA 94105; ²Shonka Research Associates; ³ENSR Corporation)

Constructed in 1943, D Building in Los Alamos was the first facility in the world to process gram and then kilogram quantities of plutonium to manufacture weapon components. As increasing amounts of the new and largely unknown plutonium were received from Oak Ridge and Hanford, purification, conversion to metal, and component fabrication were scaled up to ultimately produce the Trinity device and the Fat Man bomb. Much was learned in D Building that influenced design of production facilities for years to follow. A state-of-the-art air conditioning system, provided to keep dust out of the rare plutonium, was not as well suited to contain airborne contamination in the heavily contaminated building. Effluents via numerous roof-top vents were unfiltered and unmonitored. Official compilations of Los Alamos effluents have reflected no contribution from D Building. After DP West site took over plutonium production activities in late 1945, D Building continued to house chemical and metallurgical research and analysis with plutonium until the early 1950's. The Centers for Disease Control and Prevention's Los Alamos Historical Document Retrieval and Assessment project is studying D Building to support bounding of plutonium releases from the facility. Documents, photographs, and drawings are being reviewed, and workers with D-Building experience were identified for a roundtable meeting to fill in information gaps. Methods being evaluated to estimate historical releases consider the equipment and processes that were used, quantities that were processed, indoor and environmental measurements, and reasonable release fractions for the activities that took place. The desire to estimate D-Building releases is heightened by the fact that residential areas were in close proximity.

TAM-A.8

STUDY OF THE VARIATION IN AIRBORNE GROSS BETA CONCENTRATIONS AND RELATED CLIMATE CONDITIONS. C.A. Satterwhite¹ and T. F. Gesell² (¹Idaho National Laboratory, 1230 Aspen Drive, Pocatello, ID 83204; ²Idaho State University)

A study of the variation in airborne gross beta concentrations and related climate conditions was

completed. Radon that emanates from natural terrestrial sources leads to progeny in the atmosphere that is associated with airborne particulates and measured as gross alpha and gross beta activities. There are well-established studies of the variability of radon concentration in the environment where the concentrations are influenced seasonally by climate factors. Data available from the Idaho National Laboratory (INL) provide an opportunity to evaluate if there is also an influence of meteorological parameters with the airborne concentration of radon's progeny. The airborne gross beta concentration from the INL Oversight Program and meteorological data from National Oceanic and Atmospheric Administration that has been collected over the years was used in the investigation. Data analysis involved a variety of statistical techniques available in the commercial Microsoft computer program, EXCEL. Data sets were characterized, compared, and their relationship to each other determined. Results indicated that the gross beta activity levels portray a periodic variation that correlated with the seasonal changes. In addition it was realized that the variation in the data could be associated with the fluctuation of a certain meteorological conditions.

TAM-A.9

IN SITU AEROSOL PROBE OCCLUSION TESTS AT THE WASTE ISOLATION PILOT PLANT. R. Arimoto¹ and EMIG Team² (¹CEMRC/NM State University, 1400 University Drive, Carlsbad, NM 88221; ²WTS & CEMRC)

At the Waste Isolation Pilot Plant (WIPP), an underground repository for transuranic wastes located near Carlsbad, NM USA, Station A is used for exhaust-air compliance monitoring purposes. The aerosol sampling systems deployed there are of the same basic type as used to develop the American National Standards Institute (ANSI) N13.1 (1969 and 1999) standard. These probes operate at flow rates of $\sim 170 \text{ L min}^{-1}$ ($\sim 6 \text{ cfm}$), and each unit consists of a machined stainless-steel shroud and inner nozzle. When sampling, the probes are deployed in an exhaust shaft leading from passageways and disposal rooms mined in ancient salt deposits. Salt crusts or coatings have at times been observed on the surfaces of the sampling probes, causing concern over the representativeness of samples collected under these conditions. In response to this concern, tests have been conducted to evaluate the performance of intentionally occluded probes. The design of the study called for the space between the shroud and inner nozzle on the outlet side of an experimentally occluded (XO) sampler to be blocked in one-third increments, with deployments lasting about one month. Routine inspections of the probes prior to the study showed that fouling was most commonly seen in this part of the sampler. Baseline data