

Harold L. Beck

Education

B.S., University of Miami (summa cum laude), 1960
Graduate studies in Physics and Mathematics, Cornell University, 1960–1962

Professional Experience

Independent Consultant

(1999–present)
Radiation dosimetry, dose reconstruction, and radiation measurement

Environmental Measurements Laboratory (EML), U.S. Department of Energy

Director, Environmental Science Division, New York City (1996–1999)
Retired from federal service January 30, 1999

Director, Instrumentation Division, EML (1988–1996)

Acting Deputy Director, EML (1991–1996)

Physicist, Radiation Physics Division, EML (1963–1988)

ERDA/DOE Office of Health and Environmental Research

Technical program representative/advisor (1977–1978)
Environmental radiation and instrument development

Atomic Energy Commission

Technical Intern Program (July 1962–July 1963)

Awards

Department of Energy Meritorious Service Award, 1988.

Awarded for development of the scientific approach to reconstructing fallout doses to the U.S. population from above-ground nuclear weapons testing in Nevada. Second highest award in the department.

Elected Fellow of Health Physics Society, 1992

Elected Distinguished Emeritus Member of the National Council on Radiation Protection and Measurements (NCRP), April 2004

Current Professional Activities

Member, U.S. Scientific Review Group, Department of Energy Russian Health Studies Program, May 2005–present

Consultant to National Cancer Institute for development of Joint U.S.-Russian methodology for reconstruction of doses from fallout from weapons testing, global fallout dose reconstruction, 2002–present

Member, NCRP Scientific Committee SC-9, Deriving Organ Doses And Their Uncertainty for Epidemiologic Studies (Guidance for the One Million U.S. Radiation Workers and Veterans Study), 2013–

Member of the American Association for the Advancement of Science and the American Nuclear Society
Fellow, Health Physics Society

Previous Professional Activities (Partial Listing)

Member, National Academy of Sciences/National Research Council (NAS/NRC) Committee on Analysis of Cancer Risks in Populations near Nuclear Facilities: Phase 1, April 2011–2013

Member, National Academy of Sciences/National Research Council (NAS/NRC) Committee on Analysis of Cancer Risks in Populations near Nuclear Facilities: Phase 2 Pilot Planning, 2014

Member, Veteran's Advisory Board on Dose Reconstruction (U.S.-DOD, DTRA FACA), June 2005–2014

Consultant to National Cancer Institute for development of Joint U.S.-Russian methodology for reconstruction of doses from fallout from weapons testing, Marshall Islands Dose Reconstruction, Semipalatinsk down-winders dose reconstruction, global fallout dose reconstruction, 2002–2014

Chair, National Council on Radiation Protection and Measurements SC-6-1 on Uncertainty in External Radiation Measurements and Dosimetry, July 2004–April 2008

Member, NCRP Professional Area Committee-6- Radiation Measurements and Dosimetry, 2006–2011

Member, Nuclear and Radiation Studies Board, National Academy of Sciences/National Research Council (NAS/NRC), March 2005–December 2006

Member, Board on Radiation Effects Research (BRER), National Academy of Sciences/National Research Council (NAS/NRC), December 2004–March 2005

Scientific Vice president of the National Council on Radiation Protection and Measurements (NCRP) for Radiation Measurement and Chair of NCRP Scientific Committee 93 on Radiation Measurement, 1996–2003

Council Member, National Council on Radiation Protection and Measurements, 1992–2004

Member of the NAS/NRC Committee to Review the Dose Reconstruction Program of the Defense Threat Reduction Agency (DTRA), 2000–2003

Member of Joint USA-Japan Senior Advisory Committee to review the new 2002 Dose System for evaluating doses to survivors of the Hiroshima-Nagasaki nuclear blasts, 2002–2003

Member of the NAS/NRC Committee to Review the Dosimetry for the Radiation Effects Research Foundation Study of the Effects of the Hiroshima/Nagasaki Explosions, 1999–2002

Chair of NCRP 2001 Annual Meeting Program Committee on “Fallout from Atmospheric Nuclear Tests-Impact on Science and Society”

Consultant to UNSCEAR for 2000 report

Consultant to NAS/NRC Review Committee of Hanford Thyroid Disease Study Draft Final Report, 2000

Consultant to NCI for DHHS feasibility study of the health consequences to the American population from nuclear weapons tests conducted by the United States and other nations, 2000–2002

Scientific Advisor to the DOE Offsite Radiation Exposure Review Project (ORERP), 1979–1984

Scientific Advisor to the Federal Radiation Monitoring Centers set up to monitor the launches of the Galileo and Ulysses spacecraft carrying Plutonium RTGs

U.S. Delegate to the International Electrotechnical Commission’s (IEC) Scientific Committee 45B on Radiation Protection Instrumentation, 1990–98

Chair of NCRP Scientific Committee 64-20 on Surface Soil Contamination (NCRP report #129)

Member of Working Group 7.1, Environmental Assessment, of Joint Coordinating Committee on Civilian Nuclear Reactor Safety, composed of scientists from the former Soviet Union and U.S. to follow up on the implications of the Chernobyl Reactor Accident, 1988–1990

Member Working Group 3B (Source Term) for IAEA International Study Group on the Radiation Situation at the Former French Test Sites at Mururoa/Fangautafa

Technical advisor on numerous occasions to the Nuclear Regulatory Commission and the National Cancer Institute as well as for numerous special project groups within the U.S. Department of Energy

Publications

Over 130 publications in the areas of radiation physics, radiation protection, dose reconstruction, environmental radiation, radiation dosimetry, and instrumentation.

Recent Publications

Stram DO, Preston DL, Sokolnikov M, **et al.**, 2015. Shared dosimetry error in epidemiological dose-response analyses. *PLoS One*; 10(3):e0119418.

Land CE, Deukwoo Kwon, F. Owen Hoffman, Brian Moroz, Vladimir Drozdovitch, Andre´ Bouville, **Harold Beck**, Nicholas Luckyanov, Robert M. Weinstock and Steven L. Simon, 2015. Accounting for Shared and Unshared Dosimetric Uncertainties in the Dose Response for Ultrasound Detected Thyroid Nodules after Exposure to Radioactive Fallout, *RADIATION RESEARCH* 183, 159–173.

Bouville A, Toohey RE, Boice JD Jr, **Harold L. Beck**, Larry T. Dauer, Keith F. Eckerman, Derek Hagemeyer, Richard W. Leggett, Michael T. Mumma, Bruce Napier, Kathy H. Pryor, Marvin Rosenstein, David A. Schauer, Sami Sherbini, Daniel O. Stram, James L. Thompson, John E. Till, Craig Yoder, and Cary Zeitlin. 2015. Dose reconstruction for the million worker study: status and guidelines. *Health Phys.* 108 (2):206-220.

Till JE, **Beck HL**, Aanenson JW, **et al.**, 2014. Military participants at U.S. atmospheric nuclear weapons testing methodology for estimating dose and uncertainty. *Radiat Res*; 181(5):471-484.

- George D. Kerr, Stephen D. Egbert, Isaf Al-Nabulsi, **Harold L. Beck**, Harry M. Cullings, Satoru Endo, Masaharu Hoshi, Tetsuji Imanaka, Dean C. Kaul, Satoshi Maruyama, Glen I. Reeves, Werner Ruehm, Aya Sakaguchi, Steven L. Simon, Gregory D. Spriggs, Daniel O. Stram, Tetsuji Tonda, Joseph F. Weiss, Ronald L. Weitz, and Robert W. Young. 2013. Workshop Report on Atomic Bomb Dosimetry Residual Radiation Exposure: Recent Research and Suggestions for Future Studies, *Health Phys.* 105(2):140Y149;
- Beck, H.L.** “Monitoring Nuclear Fallout.” 2010. Chapter 18 in *Radioactive Air Sampling Methods*, edited by M. Maiello and M.D. Hoover, CRC Press.
- Simon, S.L., A. Bouville, C.E. Land, and **H.L. Beck**. 2010. “Radiation Doses and Cancer Risks in the Marshall Islands Associated with Exposure to Radioactive Fallout from Bikini and Enewetak Nuclear Weapons Tests: Summary.” *Health Phys* 99:105–123.
- Beck, H.L.**, A. Bouville, B.E. Moroz, and S.L. Simon. 2010. “Fallout Deposition in the Marshall Islands from Bikini and Enewetak Nuclear Weapons Tests.” *Health Phys* 99:124–142.
- Bouville, A, **H.L. Beck**, and S.L. Simon. 2010. “Doses from External Irradiation to Marshall Islanders from Bikini and Enewetak Nuclear Weapons Tests.” *Health Phys* 99:143–156.
- Moroz, B.E., **H.L. Beck**, A. Bouville, and S.L. Simon. 2010. “Predictions of Dispersion and Deposition of Fallout Using the NOAAHYSPLIT Meteorological Model.” *Health Phys* 99: 252–269.
- Ibrahim S.A., S.L. Simon, A. Bouville, D. Melo, and **H.L. Beck**. 2010. “Alimentary Tract Absorption (F_1 Values) for Radionuclides in Local and Regional Fallout from Nuclear Tests.” *Health Phys* 99: 233–251.
- Simon, S.L., A. Bouville, D. Melo, **H.L. Beck**, and R.M. Weinstock. 2010. “Acute and Chronic Intakes of Fallout Radionuclides by Marshallese from Nuclear Weapons Testing at Bikini and Enewetak and Related Internal Radiation Doses.” *Health Phys* 99:157–200.

Journal Articles

- Beck, H.L.** et al. 2007. Uncertainties in the Measurement and Dosimetry of External Radiation, NCRP Report No. 158, November.
- Land, C.E., Z. Zhumadilov, B.I. Gusev, M.H. Hartshorne, P.W. Wiest, P.W. Woodward, L.A. Crooks, N.K. Luckyanov, C.M. Fillmore, Z. Carr, G. Abisheva, A.S. Sigurdson, **H.L. Beck**, A. Bouville, J. Langer, R. Weinstock, K.I. Gordeev, and S.L. Simon. 2008. “Ultrasound-Detected Thyroid Nodule Prevalence and Radiation Dose from Fallout.” *Radiat Res* 169(4): 373–83.
- Beck, H.L.**, L.R. Anspaugh, A. Bouville, and S.L. Simon. 2006. “Review of Methods of Dose Estimation for Epidemiological Studies of the Radiological Impact of Nevada Test Site and Global Fallout.” *Radiation Research* 166: 209–218.
- Simon, S.L., **H.L. Beck**, K. Gordeev, A. Bouville, L.R. Anspaugh, C.E. Land, N. Luckyanov, and S. Shinkarev. 2006. “External Dose Estimates for Dolon Village: Application of the U.S./Russian Joint Methodology.” *J. Radiat. Res.* 47, Suppl., A143–A147.
- Simon, S.L., A. Bouville, and **H.L. Beck**. 2004. “The Geographic Distribution of Radionuclide Deposition across the Continental U.S. from Atmospheric Nuclear Testing.” *Journal of Environmental Radioactivity* 74: 91–105.
- Beck, H.L.** 2002. “External Radiation Exposure to the Population of the Continental U.S. from Nevada Weapons Tests and Estimates of Deposition Density of Radionuclides that Could Significantly Contribute to Internal Radiation Exposure via Ingestion.” Appendix D to *A Feasibility Study of the Health Consequences to the American Population from Nuclear Weapons Tests Conducted by the United States and Other Nations*. Washington, D.C.: Department of Health and Human Services,

- Centers for Disease Control and Prevention and the National Cancer Institute. Draft Technical Report.
- Beck, H.L.** 2002. "External Radiation Exposure to the Population of the Continental U.S. from High Yield Weapons Tests Conducted by the U.S., U.K. and U.S.S.R. between 1952 and 1963." Appendix F to *A Feasibility Study of the Health Consequences to the American Population from Nuclear Weapons Tests Conducted by the United States and Other Nations*. Washington, D.C.: Department of Health and Human Services, Centers for Disease Control and Prevention and the National Cancer Institute. Draft Technical Report.
- Bouville, A. and **H.L. Beck**. 2000. "The HASL Gummed-Film Network and Its Use in the Reconstruction of Doses Resulting from Nuclear Weapons Tests." *Technology* 7: 355–379.
- Beck, H.L.** and B.G. Bennett. 2002. "Historical Overview of Atmospheric Nuclear Weapons Testing and Estimates of Fallout in the Continental U.S." *Health Phys.* 82.
- Beck, H.L.** 2002. "Preface to Special Issue of Health Physics." Proceedings of 37th Annual Meeting of the NCRP: "Fallout from Atmospheric Nuclear Tests-Impact on Science and Society," *Health Phys.* 82.
- Bouville, A., C. Miller, **H.L. Beck**, L. Anspaugh, and S. Simon. 2002. "Estimates of Doses from Global Fallout." *Health Phys.* 82.
- Simon, S.L., A. Bouville, **H.L. Beck**, L.R. Anspaugh, C.W. Miller, N. Luckyanov. 2000. "A Summary of Estimated Doses to Members of the Public from Atmospheric Nuclear Tests at the Nevada Test Site." *International Conference on "Radiation Legacy of the 20th Century: Environmental Restoration*, Moscow, October 30–November 3.
- Simon, S.L, K. Gordeev, A. Bouville, N. Luckyanov, C. Land, Zh Carr, R. Weinstock, L.R. Anspaugh, **H.L. Beck**, and A. Romanyuka. 2002. "Estimates of Radiation Doses to Members of a Cohort Residing in Villages near the Semipalatinsk Test Site." World Health Organization, Workshop on Dosimetry of the Population Living in the Proximity of the Semapalatinsk Atomic Weapons Test Site. Helsinki, Radiation and Nuclear Safety Authority (STUK) publication A187, pp 48–54.
- Beck, H.L.** et al. 1999. Recommended Screening Limits for Contaminated Surface Soil, NCRP report No. 129.
- Beck, H.L.** et al. 2007. Uncertainties in the Measurement and Dosimetry of External Radiation NCRP Report No.158.
- Lowder, W.M., **H.L. Beck**, and W. Condon. 1964. "Spectrometric Determination of Dose Rates from Natural and Fall-out Gamma Radiation in the U.S., 1962–63." *Nature* 202: 745–749.
- Beck, H.L.** 1966. "Environmental Gamma Radiation from Deposited Fission Products, 1960–64." *Health Physics* 123 13–322.
- Lowder, W.M. **H.L. Beck**. 1966. "Cosmic Ray Ionization in the Lower Atmosphere." *J. Geophys. Res.* 71: 4661–4667.
- Alberg, M, **H.L. Beck**, K. O'Brien, and J.E. McGlaughlin. 1967. "An Investigation of Differential Energy and Angular Spectra for Cs-137 Gamma Rays in Water and Air." *Nuc Sci & Eng* 30: 65–74.
- Beck, H.L.** and G. DePlanque. 1969. "Exposure Rates in Air Due to Deposited Fission Products." *Health Phys.* 16.
- Bennett, B. and **H.L. Beck**. 1969. "External Radiation on Bikini Atoll." *Nature* 223: 925–928.
- Beck, H.L.** 1970. "The Influence of the Density Effect on Electron Induced Cascade Showers in Water and Aluminum." *Nuc Sci & Eng* 39: 120.
- Beck, H.L.** 1970. "A New Calculation of Dose Rates from High Energy Electrons and Photons Incident on 30 cm Water Slabs." *Nuc. Inst. Meth.* 78: 333–334.

- Beck, H.L.** 1971. "Monte Carlo Calculations of Electromagnetic Shower Transition Effects." *Nuc. Inst. & Meth.*: 525–531.
- Beck, H.L.** et al. 1972. "New Perspectives on Low Level Environmental Radiation Monitoring around Nuclear Facilities." *Nucl. Tech.* 14: 232–239.
- Burke, G. and **H.L. Beck**. 1974. "Calculated and Measured Dose Buildup Factors for Gamma Rays Penetrating Multi-layered Slabs." *Nuc. Sci. & Eng.* 53: 109–112.
- Beck, H.L.** 1974. "Gamma Radiation from Radon Daughters in the Atmosphere." *J. Geophys. Res.* 79: 2215–2221.
- Gudiksen, P., D.E. Jones, **H.L. Beck**, J.E. Mclaughlin, T.P. Stuart, and O.D. Lynch. 1975. "External Dose Estimates for Future Inhabitants of Enewetok Atoll." *Nature* 257: 184–287.
- Beck, H.L.** and C.V. Gogolak. 1979. "Time Dependent Calculations of the Vertical Distribution Of Rn-222 and its Decay Products in the Atmosphere." *J. Geophys. Res.* 84: 3139–3147.
- Gogolak, C.V., **H.L. Beck**, and M.M. Pendergast (Srl). 1981. "Calculated and Observed Kr-85 Concentrations within 10 Km of the Savannah River Plant Chemical Separation Facilities." *Atmos. Environ.* 15: 497–507.
- Beck, H.L.** 1982. "Spectral Composition of the Gamma-ray Exposure Rate Due to Noble Gases Released During a Reactor Accident." *Health Physics* 43 (3): 335–343.
- Beck, H.L.** and P.W. Krey. 1983. "Radiation Exposure in Utah from Nevada Nuclear Tests." *Science* 220:18-24.
- Beck, H.L.** 1983. Book Review: "Natural Radiation Environment." *Environ. Monitoring & Assessment* 3: 203.
- Miller, K. and **H.L. Beck**. 1984. "Indoor Gamma and Cosmic-Ray Exposure Rate Measurements Using a GeLi Spectrometer and Pressurized Ionization Chamber." *Rad. Prot. Dos.* 7 (1–4): 185–189.
- Beck, H.L.** and G. DePlanque. 1985. "Dose Rate Conversion Factors." *Health Phys.* 49 (5).
- Beck, H.L.** 1989. "Radiation Exposures Due to Fossil Fuel Combustion." *Radiation Physics and Chemistry*, Special Issue, 34: 285–293.
- Beck, H.L.**, I.K. Helfer, A. Bouville, and M. Dreicer. 1990. "Estimates of Fallout in the Continental U.S. from Nevada Weapons Testing Based on Gummed-film Monitoring Data." *Health Physics* 59: 565–576.
- Bouville, A., M. Dreicer, **H.L. Beck**, W., Hoecker, and B.W. Wachholz. 1990. "Models of Radioiodine Transport to Populations within the Continental U.S." *Health Physics* 59: 659–668.
- Beck, H.L.** 1991. "Reply to Use of Gummed-film Fallout Data by Harley and Harley." *Health Physics* 60: 863–864.
- Larsen, R.J., C.G. Sanderson, H.N. Lee, K.M. Decker, and **H.L. Beck**. 1994. "Fission Products Detected in Alaska Following the Toms-7 Accident." *Journal of Environmental Radioactivity* 23: 205–209.

Conference Proceedings

- Lowder, W.M., W.J. Condon, and **H.L. Beck**. 1964. "Field Spectrometric Investigations of Environmental Radiation in the U.S.A." In *Natural Radiation Environment*, University of Chicago Press, 597.
- Lowder, W.M.; **H.L. Beck**; and W.J. Condon. 1965. "Dosimetric Investigations of Environmental Gamma Radiation From Deposited Fission Products." In *Radioactive Fallout from Nuclear Weapons Tests*. Edited by W. Klement, USAEC, p. 233.
- Beck, H.L.** and B. Bennett. 1967. "Polynomial Solutions of the Gamma-Ray Transport Equation." In *Infinite Homogeneous and Two Medium Plane Geometry*. Proc. ANS 10: 400.

- Bennett, B. and **H.L. Beck**. 1969. "Penetration of Cs-137 Gamma Rays through Aluminum Slabs." Proc. ANS. June.
- Lowder, W.M.; **H.L. Beck**; and J.E. McLaughlin. 1970. "Assessment of Radioactive Contamination in the Environment by Field Gamma Spectrometry." In *Environmental Surveillance in the Vicinity of Nuclear Facilities*, Chapter 46, Edited by T. Reinig.
- Burke, G.; B.G. Bennett; and **H.L. Beck**. 1971. "Transmission of Gamma Rays through Aluminum and Laminated Lead-Aluminum Slabs." Proc. ANS 14: 395.
- Beck, H.L.** et al. 1971. "New Perspectives on Environmental Radiation Monitoring around Nuclear Facilities." Proc. ANS 13.October.
- Beck, H.L.** et al. 1971. "In-Situ External Environmental Gamma-Ray Measurements Utilizing Ge(li) and NaI(Tl) Spectrometry and Pressurized Ionization Chambers." In *Rapid Methods for Measuring Radioactivity in the Environment*, p.499, IAEA-sm-148/2.
- Lowder, W.M., P.D. Raft; and **H.L. Beck**. 1972. "Experimental Determination of Cosmic-Ray Charged Particle Intensity Profiles in the Atmosphere." In *Natural and Manmade Radiation in Space*, NASA, Tm X-2040.
- McLaughlin, J.E. and **H.L. Beck**. 1973. "Environmental Radiation Dosimetry for Nuclear Facilities and Problems." *Trans. On Nuc. Sci.* IEEE NS-20 (1):36.
- Beck, H.L.** 1972. "The Physics of Environmental Radiation Fields." In *2nd Intl Symp. on the Natural Radiation Environment*, Edited by J. Adams and W.M. Lowder, USDOE CONF 720805-p1.
- Lowder, W.M., **H.L. Beck**, G. De P. Burke, C.V. Gogolak, J.A. Decampo, and J.E. McLaughlin. 1972. "Experimental Investigations of the Environmental Radiation Field." In *2nd Intl Symp. on the Natural Radiation Environment*, Edited by J. Adams W.M. Lowder, W.M., USDOE CONF 720805-p1.
- Graveson, R.T., **H.L. Beck**, and D.C. Freeswick. 1975. "Continuously Recording Field Monitor for Kr-85." *Trans. On Nuc. Sci.* IEEE NS-22: 654.
- Beck, H.L.** & Freeswick, D.C. 1975. "A Continuous Monitoring System for Kr-85 in the Environment." *Trans. Am. Nuc. Soc.* 21: 92.
- Beck, H.L.** 1976. "Techniques for Monitoring External Environmental Radiation around Nuclear Facilities." *Proc. 8th Annual Conf. On Nuc. Safety Research* (In Japanese), Invited.
- Beck, H.L.** et al. 1976. "In-Situ Determinations of Environmental Plutonium and its Related Nuclides." *IEEE Trans.on Nucl.Sci.* NS-23 (1): 676.
- Beck, H.L.** et al. 1976. "Monitoring External Radiation around Nuclear Facilities." *Trans. Am. Nuc. Soc.* 23: 597.
- Beck, H.L.** 1977. External Environmental Radiation Levels from Natural Sources." *Trans. Am. Nucl. Soc.* 26.
- Beck, H.L.** 1978. "The Physical Properties of Environmental Radiation Fields and Their Utility for Interpreting Aerial Measurements." *Proc. ANS Topical Meeting on Aerial Techniques for Environmental Monitoring*, American Nuclear Society, p. 37.
- Beck, H.L.** et al. 1979. "Perturbations on the Natural Radiation Environment Due to the Utilization of Coal as an Energy Source." In *Proc. Natural Radiation Environment III*, DOE Conf-780422.
- Gogolak, C.V. and **Beck, H.L.** 1979. "Diurnal Variations of Radon Daughter Concentrations in the Lower Atmosphere." In *Proc. Natural Radiation Environment III*, DOE Conf-780422.
- Beck, H.L.** and K.M. Miller. "Some Radiological Aspects of Coal Combustion." *IEEE Trans Nuc. Sci.* Ns-27 (1).

- Beck, H.L.** 1981. "Report of Environmental Sampling of Fallout Areas; Nure Data Measurements and Analysis." Reporter's Transcript of 3rd Dose Assessment Advisory Group Meeting, USDOE Nevada Operations Office, July 23.
- Beck, H.L.** 1982. "Environmental Sampling Update – Measurements and Analysis." Reporter's Transcript of 5th Dose Assessment Advisory Group Meeting, Vol II: 61-84, USDOE Nevada Operations Office, May 7.
- Beck, H.L.** and K.M. Miller. 1982. "Temporal Variations of the Natural Radiation Field." *Trans. of Second Special Symp. on the Natural Radiation Environment.*, Wiley Eastern Limited.
- Miller, K.M. and **H.L. Beck**. 1982. "Some Effects of Coal Combustion on the Radiation Environment." LASL-9106-c. Los Alamos National Laboratory Report.
- Beck, H.L.** 1983. "Update on Nure & Sticky Paper Data Analysis." Reporter's Transcript of 6th Dose Assessment Advisory Group Meeting, Vol I: 285-300, USDOE Nevada Operations Office, January 6.
- Beck, H.L.** 1983. "Update Information on Analysis of Nure Data and the Sticky Gum Paper Network." Reporter's Transcript of 7th Dose Assessment Advisory Group Meeting, Vol II: 138–151, USDOE Nevada Operations Office, May 20.
- Beck, H.L.** 1983. "Update of the Analysis of Nure Data/Estimate of Extended Fallout Patterns Calculated from Gummied-Film Data." Reporter's Transcript of 8th Dose Assessment Advisory Group Meeting, Vol I: 151–170, USDOE Nevada Operations Office, October 20.
- Beck, H.L.** 1985. "Update on Nure and Gummied-Film Analysis." Reporter's Transcript of 11th Dose Assessment Advisory Group Meeting, Vol II: 73–103, USDOE Nevada Operations Office, February.
- Beck, H.L.** 1985. "Comparison of Orerp and Environmental Laboratory Results at Selected Sites." Reporter's Transcript of 12th Dose Assessment Advisory Group Meeting, Vol II: 33–54, USDOE Nevada Operations Office, October.
- Beck, H.L.** 1987. Phase III Wrap-up. Reporter's Transcript of 14th Dose Assessment Advisory Group Meeting, USDOE Nevada Operations Office, May.
- Beck, H.L.** 1987. "Evaluation of Phase II Soil Analysis." Reporter's Transcript of 14th Dose Assessment Advisory Group Meeting, USDOE Nevada Operations Office, May.
- Gogolak, C.V. and **H.L. Beck** 1988. "Radiological and Environmental Impact of Fossil Fuels." *Transactions: ANS Topical Conference on Radiological Effects on the Environment Due to Electricity Generation*, pp. 17-18, December.
- Beck, H.L.** and P.W. Krey. 1988. "Reconstructing Fallout Exposures to the U.S. Population from Weapons Testing in Nevada During the 1950s." In *Radiation Protection Practice*, Proc. Seventh Int. Congress of the Int. Rad. Protection Assoc., New York: Pergamon Press, Vol. 3, pp. 1578-1581, April.
- Bouville, A., M. Dreicer, **H.L. Beck** and B.W. Wachholz. 1988. "Assessment of Iodine-131 Transfer to Cow's Milk and to Man Resulting from the Nevada Weapons Tests of the 1950s." In *Radiation Protection Practice*, Proc. Seventh Int. Congress of the Int. Rad. Protection Assoc., New York: Pergamon Press, Vol. 3, pp. 1387-1390, April.
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Technical Reports

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- Alberg, M.; **H.L. Beck**; K. O'Brien; and J.E. Mclaughlin. 1966. Tabulated Values of Experimentally Determined Differential Energy and Angle Spectra for Cs-137 Gamma Rays in Water and Air. USAEC Report HASL 187. December.
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- Beck, H.L.** 1969. A Monte Carlo Simulation of the Transport of High Energy Electrons and Photons in Matter. U.S A E C. Report HASL 213. October.
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- Mclaughlin, J and **H.L. Beck**. 1969. Cobalt Integrator Neutron Fluence Intercomparison Measurement. HASL Tech Memo Tm-69-19.
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