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ARNOLD D. KERR LECTURE

IMPROVING RAILROAD TRAIN AND HAZARDOUS MATERIALS TANK CAR SAFETY



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APRIL 25, 2022

4:00 P.M. LECTURE | MITCHELL HALL

ABSTRACT

In the four decades since economic regulation of railroads was reduced under the Staggers Act of 1980, they have invested in infrastructure, rolling stock, and technology leading to substantial improvements in train safety and efficiency. Over the same period, the damage resistance of tank cars involved in derailments has also improved as due to design changes resulting from private sector initiatives and new regulations that were informed by extensive research by industry and government. It is thus paradoxical that some of the most serious, high-profile hazardous materials release accidents have occurred in the past decade or so. This led to renewed interest in how to prevent or mitigate train accidents and further improve tank car safety design. Identifying the most important improvements and maximizing their efficacy has benefited from statistical and analytical modeling conducted by the RailTEC Safety and Risk Research Group at the University of Illinois. This presentation will discuss this research and some of the findings affecting rail safety improvements.

BIOGRAPHY

Chris Barkan joined the faculty of the University of Illinois at Urbana-Champaign (UIUC) in 1998. Prior to that he was Director of Risk Engineering at the Association of American Railroads (AAR) in Washington, DC where he was employed for ten years in AAR's Research & Test and Safety & Operations Departments. His research interests are in railroad safety, train derailment analysis, hazardous materials transportation risk, and tank car safety. He has supervised 16 Ph.D. students and more than 70 M.S. students, all of them in rail engineering and transportation subjects. As Director of RailTEC, he leads the UIUC research and educational programs in railway engineering. He has been Deputy Director of the Railway Supply Institute-AAR Railroad Tank Car Safety Research and Test Project since 1989 and has served as Director of the AAR research program at the University of Illinois since 1998. From 2012 – 2020 he also served as Director of the National University Rail (NURail) Center, a consortium of seven colleges and universities under the US DOT University Transportation Center program. Dr. Barkan is an author or editor of more than 200 railroad-engineering papers, reports, chapters, or books on a range of rail subjects. He and his students have won a number of awards for research presented at international conferences and papers published in peer-reviewed journals. He has provided expert testimony before Congressional committees, the National Transportation Safety Board, and other government agencies and served as an invited member on oversight and review committees for a number of US DOT research programs. He completed his B.A. at Goddard College in 1977, and his M.S. and Ph.D. degrees in 1984 and 1987, respectively, at the State University of New York at Albany. He then held a Postdoctoral Fellowship at the Smithsonian Environmental Research Center prior to his employment at the AAR.