

# ATTACHMENT 5

Comments by Dr. Fred Millar on the Draft  
Environmental Impact Report for the Valero  
Benicia Crude by Rail Project,  
September 15, 2014

# **Comments on the Draft Environmental Impact Report for the Valero Benicia Crude-by-Rail Project**

**September 15, 2014**

Dr. Fred Millar  
915 S. Buchanan St., No. 29  
Arlington, VA 22204  
703-979-9191  
fmillarfoe@gmail.com

I am a policy analyst, researcher, educator, and consultant with more than three decades of experience assessing the risks associated with transporting hazardous materials. Over the course of my career, I have advised governmental bodies, national chemical and oil worker unions, insurance companies, universities, and environmental groups on the unique health and safety hazards of shipping hazardous materials—including crude oil—by rail. I have testified before both houses of the United States Congress, and have presented as an invited lecturer in twelve countries on chemical transportation accident prevention. As a pro bono consultant, I have provided specific analyses of risks associated with transporting crude oil by rail in and around cities across the United States, including Albany, New York and Washington, D.C.

I am familiar with Valero’s proposal to begin accepting crude oil shipments by rail at its Benicia refinery. I have reviewed the draft Environmental Impact Report (EIR)’s discussion of the hazardous impacts associated with this proposal, including a report by Dr. Christopher Barkan and others, purporting to calculate the probability of crude oil release due to tank car derailment on the portion of the rail route between Roseville and Benicia (Appendix F to the draft EIR).

The draft EIR fails to fully analyze, disclose, and mitigate significant hazardous impacts of shipping crude oil by rail to the Benicia refinery. First, the probability analysis referenced in the draft EIR and explained more fully in the Barkan Report fails to consider multiple important risk factors, described in detail below. As a result of these omissions, the draft EIR incorrectly concludes that the probability of crude oil release, and thus the potential for significant impact, is low. Second, the draft fails to adequately disclose and analyze the consequences of events it considers low-probability, thereby ignoring that even low-probability impacts can be significant if their consequences are sufficiently grave. Because it assumes that hazardous impacts from crude by rail transport are insignificant, the draft EIR also fails to require any of the various possible mitigation measures.

**I. There are gaps in the draft EIR’s analysis of the probability of a crude oil release from rail cars; as a result, it overlooks potentially significant hazardous impacts.**

The draft EIR’s conclusion that hazardous impacts related to transporting crude oil to the Benicia Valero refinery are not significant stems directly from the

Barkan Report's conclusion that the risk of a crude oil release from rail cars is low. However, the Barkan Report is flawed and overlooks important risks. Several of the Barkan Report's major omissions follow below.

**A. The draft EIR fails to disclose the probability of a release on railroad miles outside the Roseville to Benicia route.**

To begin, the Barkan Report looks only at the probability of crude oil release due to tank car derailment between Roseville and Benicia; it contains no discussion whatsoever of the risk of release on the longer route before arriving in Roseville through perhaps much more challenging California landscapes. The formula the Report uses to calculate probability shows that the greater length of track a tank car travels, the higher its probability of release. *See* App. F at 2. Yet it makes no attempt to calculate the length of track the tank cars will travel within or beyond California before arriving in Roseville, let alone the conditions along that route. Given that there are limited potential rail paths that the tank cars could take, the draft EIR could easily have analyzed the risks along the longer route; it simply chose not to.

**B. The draft EIR's probability calculation fails to take into account specific physical features of the Roseville-Benicia route, beyond what classes of track are present.**

Even for the segment of the rail route the Barkan Report does analyze, it fails to look at risk factors related to local conditions along the route. The Barkan Report's probability analysis takes into account one physical characteristic of the track between Roseville and Benicia: the type of "track classes" present, as defined by the Federal Railroad Administration (FRA). *See* App. F at 2-4, 6-7. The Report contains no discussion of the many other potential segment-specific infrastructure risk issues associated with the track structures and roadbed present, such as dangerous curves, washout potentials, trestles or tunnels, etc.

It is well-established that local route conditions can pose serious derailment risks. For example, it is clear that specific route characteristics were centrally important in the Lac-Megantic, Quebec crude oil train derailment and fire on July 2, 2013. Although the draft EIR dismissively pigeon-holes the cause of the Lac-Megantic accident as "human error," *see* Draft EIR at 4.7-19, the disaster was also the result of infrastructure issues involving downhill grades and the presence of

curves/switches in the downtown area. Local conditions also influenced the derailment and oil spill in Lynchburg, Virginia on April 20, 2014.<sup>1</sup>

The Barkan Report's neglect of route-specific factors and the history of accidents, violations, etc. along the Roseville-Benicia route is especially puzzling given that Dr. Barkan's own past work acknowledges the importance of looking at local features when assessing risk. For example, in a 2003 study, Dr. Barkan noted that "[t]he severity of a particular hazardous materials accident" relates to "the particular circumstances and location of the release."<sup>2</sup> In that same study, Dr. Barkan vividly highlighted the very top risk factors in accident causation on a given stretch of track as including broken rails and welds and buckled track—neither of which is discussed for the Roseville-Benicia route.

Instead, the Barkan Report attempts to estimate the probability of derailment in a specific local area by combining the local track class data point with generic national data on release rates derived from previous accidents of all kinds. A closer look at specific infrastructure features of the Roseville-Benicia route is required to reach any fair estimate of probability of accidental crude oil releases, especially given possible new operations challenges caused by the expected heavy volumes of unit trains.

**C. The draft EIR fails to calculate the probability of release along particularly vulnerable segments of the Roseville-Benicia route, other than the Suisun wetlands.**

The Barkan Report analyzes the probability that a crude oil release will occur anywhere along the Roseville-Benicia train route. It does not ask whether local track

---

<sup>1</sup> *Va. oil train derailment is latest "wake-up call": expert*, CBS/AP, May 1, 2014, [http://www.pennlive.com/midstate/index.ssf/2014/05/oil\\_tankers\\_fall\\_into\\_james\\_ri.html](http://www.pennlive.com/midstate/index.ssf/2014/05/oil_tankers_fall_into_james_ri.html) ("Grady Cothen, a former Federal Railroad Administration official, said given the recent wet weather in Virginia and the accident's location near a river, it's possible that soft subsoil may have weakened the track, Cothen speculated.").

<sup>2</sup> Christopher Barkan et al., *Railroad Derailment Factors Affecting Hazardous Materials Transportation Risk*, Transportation Research Record 1825, Paper No. 03-4429 at 67 (2003) (hereinafter "Barkan 2003"), available at [http://railtec.illinois.edu/cee/pdf/Barkan\\_et\\_al\\_2003.pdf](http://railtec.illinois.edu/cee/pdf/Barkan_et_al_2003.pdf).

conditions or other factors make an accident on any subsection of that route more probable, with one exception: the report does derive a specific probability of crude oil release on the section of track that passes through the Suisun wetlands. However, the Suisun wetlands are not the only vulnerable location along the Roseville-Benicia route. Other sensitive off-track receptors, such as high-population density centers, schools, hospitals, etc., may make the consequences of a crude oil release at certain locations particularly grave. Neither the Barkan Report nor the draft EIR discloses any of these other sensitive areas along the train route. Nor do they analyze whether the specific risk to such areas may be heightened.

**D. The probability calculation fails to consider the most recent data available on crude-by-rail accidents, or the risks specific to operation of crude oil unit trains.**

The Barkan Report also ignores potentially significant hazardous impacts because its probability calculation does not take into account the unique risks that crude oil unit trains pose. Unit trains tend to be longer and heavier than traditional shipping trains. As explained by the United States Department of Transportation, crude oil unit trains

are longer, heavier in total, more challenging to control, and can produce considerably higher buff and draft forces which affect train stability. In addition, these trains can be more challenging to slow down or stop, can be more prone to derailments when put in emergency braking, and the loaded tank cars are stiffer and do not react well to track warp which when combined with high buff/draft forces can increase the risk of derailments.<sup>3</sup>

A credible probability analysis depends crucially on a complete, relevant dataset. No analysis of the probability of a crude oil release from a unit train can be

---

<sup>3</sup> Dept. of Transportation, Pipeline and Hazardous Materials Safety Administration, Draft Regulatory Impact Analysis for Hazardous Materials: Enhanced Tank Car Standards and Operational Controls for High-Hazard Flammable Trains; Notice of Proposed Rulemaking, July 2013 (“Draft RIA”) at 24.

complete without data from 2010 and later, when transportation of crude oil in unit trains took off in the United States. However, the Barkan Report derives its probability calculation from historical train and railcar accident data that pre-dates 2010. It does not explain why this outdated accident data is applicable to predicting the behavior of longer, heavier unit trains; nor is it clear how such data is relevant.

As just one example, the Report calculates a train derailment rate (one variable in its probability equation) from pre-2010 accident statistics in the FRA's Rail Equipment Accident database. App. F at 2-3. According to the FRA database, the average speed of a train involved in a reported accident was 27 miles per hour. But modern unit trains travel much faster: freight railroads have recently announced their intention to voluntarily *reduce* the speeds of unit trains carrying crude oil to 50 miles per hour, or 40 miles in "high-threat" urban areas.<sup>4</sup> Dr. Barkan's prior work indicates that speed is one of the most important factors determining whether a derailment will lead to a significant hazardous materials accident.<sup>5</sup>

Likewise, the Barkan Report's analysis assumed that in an average derailment event, six individual cars would derail, again based on the outmoded FRA accident data. App. F at 5. The Report contains no discussion of how realistic this assumption is for crude oil unit trains, which contain more cars on average. National data on train accidents from 2010 and later is available. The Department of Transportation, for example, recently used 2006 through 2013 data to estimate the severity of accidents from crude oil unit train derailments in a recent rulemaking.<sup>6</sup> The draft EIR simply chose to ignore the most recent, most relevant data.

The draft EIR and underlying analysis made no attempt to otherwise account for the acute dangers that are particular to unit train operation. Multiple professional outlets have recognized the huge difference in risk between transporting crude oil by unit train and traditional rail shipment, including the Association of American Railroads' August 2013 Circular OT-55N (dated August 5,

---

<sup>4</sup> Association of American Railroads, *Freight Railroads Join U.S. Transportation Secretary Foxx in Announcing Industry Crude By Rail Safety Initiative*, Feb. 21, 2014, <https://www.aar.org/newsandevents/Press-Releases/Pages/Freight-Railroads-Join-U-S-Transportation-Secretary-Foxx-in-Announcing-Industry-Crude-By-Rail-Safety-Initiative.aspx>

<sup>5</sup> See Barkan 2003, at 64.

<sup>6</sup> Draft RIA at 25.

2013) and the National Traffic Safety Board's April 2014 Safety Forum. Various federal safety studies and federal agency directives have also cited unit trains as a key safety concern. In fact, Dr. Barkan's own prior scholarship suggests that special characteristics of unit trains are important to assessing risk. Adequately predicting the probability of accidental release of crude oil from a rail line would require an assessment of the particular operations, behavior, and risk of flammable unit trains, especially their history and potential for multi-car derailment. The Barkan Report and draft EIR do no such thing.

**E. Instead of relying on real-world data about crude-by-rail accidents, the Barkan Report uses a method of calculating the resistance of tank cars to puncture that is non-transparent, untested, and unreliable.**

As explained above, many of the variables the Barkan Report uses to calculate the probability of a crude oil release are deficient because they ignore the most recent, most relevant data on unit train derailment. Another variable—the conditional probability of release (CPR), or imperviousness of a derailed car to puncture—is suspect for additional reasons. The Barkan Report derives its CPR value from non-transparent industry sources, in some places without citation to any specific documents. The method used to derive the CPR is quite new and relatively untested in the scientific literature. Moreover, calculated CPR values are particularly unreliable as a proxy for the resistance of 1232 tank cars, which the Barkan Report assumes will be used to transport crude to Benicia. As discussed at the National Transportation Safety Board's April 2014 Safety Forum, there is simply not enough data from crashes involving 1232 cars to constitute a strong empirical basis for CPR projections. At that forum, Todd Treichel, the director of the RSI-AAR Railroad Tank Car Safety Research and Test Project stated, "The 1232 cars, the CPC-1232 cars in particular remain fairly scarce in our data, so the specific question how have they performed in accidents so far doesn't really confirm or dispute the CPR estimates until there are many more cars that have been derailed in many more types of accidents."<sup>7</sup> The Barkan Report does not disclose this weakness in its chosen

---

<sup>7</sup> NTSB Rail Safety Forum: Transportation of Crude Oil and Ethanol, Washington, D.C., April 22, 2014, transcript at 82, available at <http://dms.nts.gov/pubdms/search/hitlist.cfm?docketID=56186>

methodology. Nor does it provide any explanation of why CPR values based on other types of cars in the national dataset should be applied to 1232 tank cars.

**F. The draft EIR fails to consider whether some risk factors should be weighted more heavily than others in assessing the probability of hazardous impact.**

The Barkan Report and draft EIR fail to take into account many factors, described above, that suggest that the proposed crude-by-rail project has significant hazardous impacts. Even among the risk factors it does consider, the Barkan Report does not discuss or rank which factors are most important, and by how much, in accounting for releases from trains. Diminishing the weight given to the most important risk factors necessarily skews a risk analysis toward underestimating the risks present.

**G. The draft EIR's method of calculating risk is not safety conservative.**

Despite all the foregoing omissions and oversights in its analysis, the Barkan Report asserts that its method of calculating the probability of a crude oil release is "probably" safety conservative. App. F. at 8-9. There is no reason to think this is the case, and in fact, as detailed above, there are many reasons to think the analysis underestimates the potential public safety risk inherent in Valero's proposal.

The short life of the crude-by-rail industry in North America has already seen a number of serious crude oil releases. The Barkan Report makes no effort to suggest that the probability of release derived from its equation is either higher or lower than real-world release rates. Instead, the Report touts the overall decline in hazardous materials release rates from trains over the past decades. But that trend is irrelevant, and even misleading, without taking into account the recent history of crude-by-rail operations.

**II. The draft EIR fails to take into account the potential significance of foreseeable low-probability, high-impact risks of transporting crude oil by unit train.**

Even if the probability of a crude oil release between Roseville and Benicia were as low as the Barkan Report says it is, the draft EIR's conclusion that there are no potentially significant hazardous impacts is unjustified. The draft EIR assumes that the potential significance of a crude oil release is based solely on probability that the release will take place. However, the existence of a potentially significant impact stems not just from the probability of the impact, but also its foreseeable consequences. Put most simply: risk = consequence x probability.

The Barkan Report neither discloses nor analyzes the consequences of any of the risks it identifies. The draft EIR's hazardous impacts section contains a brief description of the fallout from major crude-by-rail accidents at Lac-Megantic; Lynchburg, Virginia; Aliceville, Alabama; and Casselton, North Dakota. Draft EIR at 4.7-6 to 4.7-8. However, it fails to disclose or analyze the reasonably foreseeable local impact of a comparable accident between Roseville and Benicia. For example, at Lac-Megantic, 63 tank cars derailed, releasing 1.6 million gallons of crude oil, which then ignited, killing 47 people. Draft EIR at 4.7-8. The City of Davis has a population 10 times greater than Lac-Megantic, and is almost 10 times as densely populated. A Lac-Megantic-style inferno in Davis would be devastatingly significant even if, as the draft EIR assumes, it would only happen once in 111 years.

\* \* \*

Based on the foregoing, I conclude that the draft EIR and underlying Barkan Report fail to disclose and analyze the potentially significant hazardous impacts of transporting crude oil by rail to the Benicia Valero refinery: first, by failing to consider evidence tending to show that the probability of a crude oil release is higher than the draft EIR posits, and second, by ignoring the impacts of low-risk, high-consequence events. The final EIR must account for and mitigate these significant impacts.

**FRED MILLAR, Ph.D**  
**915 S. BUCHANAN ST. No. 29**  
**ARLINGTON VA 22204**  
**TEL: 703-979-9191 e-mail: fmillarfoe@gmail.com**

Public interest and environmental safety advocate, national policy analyst and lobbyist, trade union strategic researcher, educator and consultant, based in Washington, D.C., with skills, technical expertise and national, local and international contacts in a wide range of issues and strategies. Recognized international analyst in nuclear waste storage and transportation and industrial chemical use, transportation and accident prevention, emergency planning and homeland security. Consultant to the major U.S. chemical and oil worker unions, environmental groups, insurance companies and university and governmental bodies including the District of Columbia Council. Campaigns and accomplishments have covered a wide range:

- Analyzed safety problems and advocated national and grassroots action strategies for chemical hazard assessment, emergency planning, accident prevention, and public access to information. Educated citizens, workers and public officials in scores of petrochemical communities on generic industrial safety issues and on existing risk documents such as worst-case accident scenarios. Advocated many specific safety improvement activities by companies and governments.
- Conceived, initiated and with allies advocated successfully for new legislation enacting a major new federal regulatory program on prevention of chemical accidents: The Clean Air Act Amendments of 1990 impact an estimated 15,000 U.S. chemical and oil facilities and provide an estimated \$3 billion of worker safety training and new risk documents for workers, government officials and the public.
- After 9/11 raised nationally and in major target cities the issue of urban transportation of ultrahazardous cargoes providing attractive targets/weapons for terrorists. Campaign included new re-routing bills introduced in 10 cities and 3 states, testimony in city council hearings, supporting materials solicited from experts, submission of expert affidavit for court case, community presentations, national overview articles in trade press and chapters in books, op-ed pieces and promotion of coverage by local and national media. Wrote and lobbied for national rail hazmat re-routing legislation signed by the President on August 3, 2007, and led subsequent efforts to improve the law and regulations.

**2004-present Consultant on chemical accident and terrorism risks.**

Projects for various clients included: proposed oil refinery expansion to use Hydrogen Fluoride in Bakersfield CA (comments on DEIS and community protest led to revised proposal without HF); analysis for Will County IL of proposed 10-fold expansion of rail freight including hazmat cargoes through 30 populated Chicago suburbs; analysis of terrorism risk scenarios in publications by Columbia University and insurance company; media research on regional rail

hazmat risks; analysis of transportation risks of nerve gas chemicals; comment on CA state task force on railroad safety; analysis of chlorine transportation routes; for City of Savannah, analysis of LNG trucking risks and recommendations for local hazmat flow study; analysis of risks of major petrochemical port in South America; plus pro bono consulting, most recently on crude oil by rail issues in Albany NY and Washington DC.

**2003-2005 Director, Target Cities Re-Routing Project, Friends of the Earth, Washington, D.C.**

Initiated foundation-funded project to reduce safety and terrorism risks in transportation of ultrahazardous industrial chemical cargoes through High Threat Target Cities, with beginning focus in the Nation's Capital. Analyzed issues and regulations and advocated successfully for enactment of local DC Council Bill 15-525 banning the most dangerous cargoes; did technical, legal and regulatory analysis for fact sheets, Council testimony and slides; led alliance of union locals, tourist industry, emergency room physicians, environmentalists and public health associations in promoting the bill; did outreach and community presentations to Local Emergency Planning Committees, Metropolitan Washington Council of Governments, George Washington University occupational health forum, and media shows. Met with major stakeholders such as chemical shippers, city agencies, and railroads. Analyzed the issues and initiated introduction of re-routing ordinances in 10 other target cities, including St. Louis, Minneapolis, Memphis, Buffalo, Albany, Cleveland, Baltimore, Boston, Chicago and state legislatures of New York State and Tennessee. As the issue reached the national level in 2005 and again in 2007, helped write re-routing legislation for several committees of the House and Senate, and commented on the 2006 proposed twin rail security regulations from the Transportation Security Administration/DHS and US DOT. Consulted with target city governments, TV investigative reporters, national media, citizen groups. Invited expert presentation on dangerous cargoes to US Coast Guard's Chemical Transportation Advisory Committee, May 2006, Philadelphia PA and in roundtable "Railroad Routing of Hazardous Materials Expert Panel" hosted by ATSDR/DHS/SRB, September 2006 Atlanta GA. Wrote op eds and articles for trade journals and for book: James J.F. Forest (ed.), "Homeland Security" by Praeger Security International, 2006, Volume 3.

**2004-2005 Consultant, International Brotherhood of Teamsters Rail Conference, Washington, D.C.**

Analyzed rail safety, transportation security, and Liquefied Natural Gas facility security issues for the Research and Strategic Initiatives departments. Initiated project for survey and publication "High Alert" on chemical security issues in rail yards.

**2001-2002 Consultant, Bio-Terrorism Technology, Public Technology Inc., Washington, D.C.**

Analyzed availability of emerging technologies from federal laboratories for detection and decontamination of biological agents for use by local officials in a terrorism context. Analyzed technical and testing data, provided summaries, wrote comparisons of the technologies and recommendations for an ongoing system of third-party assessment and user needs surveys that

could help local officials wisely spend public funds on new capabilities.

**2000-2001 Research Director, Roofers International Union, Washington, D.C.**

In the service of an organizing campaign with residential construction workers in the Southwest U.S., did strategic corporate analysis on major homebuilder corporations. Wrote homebuilder corporate profiles and White Paper on worker justice issues. Advocated strategies on sprawl, retirees and healthcare, and networked with union retiree groups, Interfaith Councils, AFL-CIO and other allies. Did web analysis and advocacy for the campaign website, campaign leaflets, etc.

**1999-2000 Director of Environmental and Public Safety Policy, Center for Y2K and Society, Washington, D.C.**

Analyzed and publicized the potentially catastrophic systemic safety risks that Y2K posed to major national infrastructures such as petrochemical, water supply and food industries, to at-risk communities and to democratic decision-making. Wrote technical and policy analyses and policy and action-oriented recommendations content for Center's website. Advocated safety improvements in national and local forums and in weekly conference calls with allies.

**1995-1997 D.C. Coordinator, Nuclear Waste Citizens Coalition, Washington, D.C.**

Coordinated the work of a coalition of national and regional groups, from both commercial nuclear power plant communities and nuclear weapons site communities. Analyzed issues of centralized interim storage and transportation of irradiated fuel. Did technical research and organized and led Congressional advocacy, convened meetings of member groups, and wrote weekly fact sheets, analyses and recommendation on the issue.

**1994-2002 Consultant, nuclear waste and chemical accident prevention policies**

Clients included Public Technology Inc., Oil Chemical and Atomic Workers International Union, United Steelworkers of America, International Chemical Workers Union, Operating Engineers International Union, Friends of the Earth/England and Wales, National Environmental Law Center, Environmental Working Group, Labor Ministry of Brazil, Greenpeace International. Provided analysis for curriculum and delivered content at chemical accident prevention training programs, advocated for safety improvements at conferences on chemical accident prevention policy and programs, advocated for worker and citizen action implementing the new US chemical accident prevention laws.

**1989-1994 Director of the Toxics Project, Friends of the Earth, Washington, D.C.**

Responsible for analysis, policy development, lobbying and advocacy in chemical accident prevention, risk assessment, air toxics emissions, right-to-know issues, hazardous materials transportation and multinational corporate accountability.

- Built ad hoc partnerships of activists, workers, state and local officials and media contacts in chemical communities and provided technical and strategy analysis and recommendations. Founded and initially steered the Working Group on Community Right-To-Know, comprised of national and local environmental groups and labor unions. Wrote and published foundation-funded “The Community Plume” publication with analyses and fact sheets, to recommend strong roles for federally-mandated Local Emergency Planning Committees.
- As a safety analyst and policy expert, addressed international conferences on chemical accident prevention. Served as environmental advocate with the U.S. government delegations and developed recommendations for safety improvement in conferences with industry and government participants in London, Manchester, Stockholm, Berlin, Boston, Milan, Goa and Ahmedabad (India), and Tokyo.
- Worked with the environmental and labor coalition that in 1991-94 lobbied OSHA and EPA, advocating regulations to implement the Clean Air Act Amendments of 1990. Provided analysis and recommendations for testimony in Congressional hearings and wrote technical comments on proposed regulations.
- As an OSHA grant-funded consultant to the three major U.S. petrochemical labor unions, trained groups of workers in several cities on chemical accident risks and accident prevention. Advocated in Congress for two major unions for new worker safety training funds.
- *International advocacy:* gave invited presentations on chemical accident prevention and community right-to-know policy and legislation to government and industry officials, universities and citizens groups in Brazil, Canada, Lithuania, Latvia, Bulgaria, Mexico, India, Vietnam, Thailand, Germany, Argentina, and Australia.

**1979-1988 Director of the Nuclear and Hazardous Materials Transportation Project at the Environmental Policy Institute, Washington, D.C.**

Spearheaded environmentalist efforts, educated the public and advocated for safety improvement by the government and corporations on issues of nuclear and hazardous materials storage and transportation.

Worked with Capitol Hill, several regulatory agencies, national trade associations, national media, environmental NGOs, labor unions, petrochemical industry, investor groups, and funders to develop recommendations in testimony before several House and Senate committees.

**1978-1979 Research consultant, Ohio Public Interest Campaign.**

Working under a federal grant, researched and wrote final evaluation of a four-year project on plant closings in Ohio.

**1972-1978 Assistant Professor of Sociology, George Mason University, Fairfax, Virginia.**

Taught political sociology, social problems, sociology of war and peace, social theory.

## **PUBLICATIONS**

- Fire Chief Fire Magazine blog 9 21 10 "Coming to a City Near You" on rail security
- Cargo Security International report 2pp, "Rail Security: Risk Factors", June-July, 2010
- "Terror threats ought to factor into rail routes," op ed June 19, 2009, Minneapolis, Minn., Star Tribune.
- "Dangerous railroad cargo could threaten public safety", op ed July 17 2009, St Louis Post-Dispatch
- White Paper, Friends of the Earth, "Transcontinental Freight Rail Monopoly Game: Chicago Area Communities In Play and At Risk" September 2008
- "Seven Years After 9/11: No Protective Rail Hazmat Re-Routing Yet", guest column in Government Security News, March 18, 2009
- "Don't Insult Citizens", letter to editor, May 11, 2008, Bakersfield Californian
- "Diverting Risk", Cargo Security International, December 2008/January 2009, pp. 26-28
- "Rails shouldn't fight hazmat rules", analysis of new federal regulations, in The Journal of Commerce, January 21, 2008
- "'Betting the Nation: Poison Gas Cargoes Through Target Cities," in James J.F. Forest (ed.), "Homeland Security: Protecting America's Targets" by Praeger Security International 2006, Volume 3 "Critical Infrastructure".
- "The Elephant in the Living Room," opinion piece on WMD cargoes in ports, in The Journal of Commerce, May 1, 2006.
- "New Strategies to Protect America: Putting Rail Security on the Right Track", a paper in the Critical Infrastructure Security Series, published by the Center for American Progress, 2005.
- "City Limits", Opinion piece on hazmat security, in Cargo Security International magazine, October 2004.
- "The Terrorism Prevention and Safety in Hazardous Materials Transportation Act of 2004",

DC Bill 15-525, enacted in February 2005. Upheld in Federal District Court, it has been the model for similar re-routing bills in Baltimore, Cleveland, Boston and Chicago

\* "Hell Might Come on Wheels," op-ed piece in "Close To Home" section, Washington Post, February 16, 2003, on the terrorism and hazardous materials transportation issue.

\* Articles with recommendations for school boards on terrorism and hazardous materials issues, "School Board Journal", 2003.

\* "Don't Harm the Most Vulnerable", a White Paper on Residential Construction in the Southwest, Roofers Local 135, Phoenix AZ, July 2000

\* "Y2K and the Environment: The Challenge for Local Officials", published by Public Technology Incorporated, 1999.

\* "Winning the Right-To-Know", in The Environmental Forum, December, 1992

\* "The Community Plume", a foundation-funded publication that Friends of the Earth sent to 4100 Local Emergency Planning Committees in the U.S., 1988-91.

\* Op-Ed piece, New York Times Business Section, "Braking the Slide in Chemical Safety", May 1986

\* "Regulations on the Routing of Irradiated Fuel," a chapter in The Urban Transport of Irradiated Fuel (Macmillan Press, 1984)

\* "Hazardous Materials Transportation", a series of three articles for International Fire Chief magazine, 1981.

## **EDUCATION**

B.A. in Philosophy from Notre Dame University (1966)

M.A. and Ph.D. in Sociology from Case Western Reserve University (1975).