

## **Comments on the NPRM for Rear Underride Guards on Trailers**

I would like to respond to the underride guard rulemaking that is presently open for public comments. I would like to offer my opinion on this very important topic.

I am by no means an engineer but will encourage those experts to respond to this rulemaking as well. I am, nonetheless, a victim of the past policies of the DOT and NHTSA to determine highway safety matters.

After having delivered over 11,000 signed petitions to the Department of Transportation (DOT) on May 5, 2014, we are encouraged to see some action on this issue take place. We are, however, very disappointed that the DOT is only proposing to adopt the present Canadian standard which went into effect on September 1, 2007. This is an 11 year-old regulation during the time of the swiftest change in automotive technology, including safety, in history. NHTSA's proposed rule would provide very little improvement over the present U.S. Federal standard and is, in fact, already being met by a majority of the trailer manufacturers.

I can fully understand why the easiest path might have been taken in order to show some improvement. Yet such a course of action directly contradicts the promise made by Secretary Foxx when he met with my wife and other volunteers from the Truck Safety Coalition on September 12, 2013. Foxx stated that, "I promise that you will see tangible [i.e., substantial] progress" on truck safety issues in a short period of time. At that time, Marianne requested NHTSA to issue an improved underride guard rule be issued and to start the process of issuing a rule on side guards and front override guards. That request was included in our May 5, 2014 petition as well.

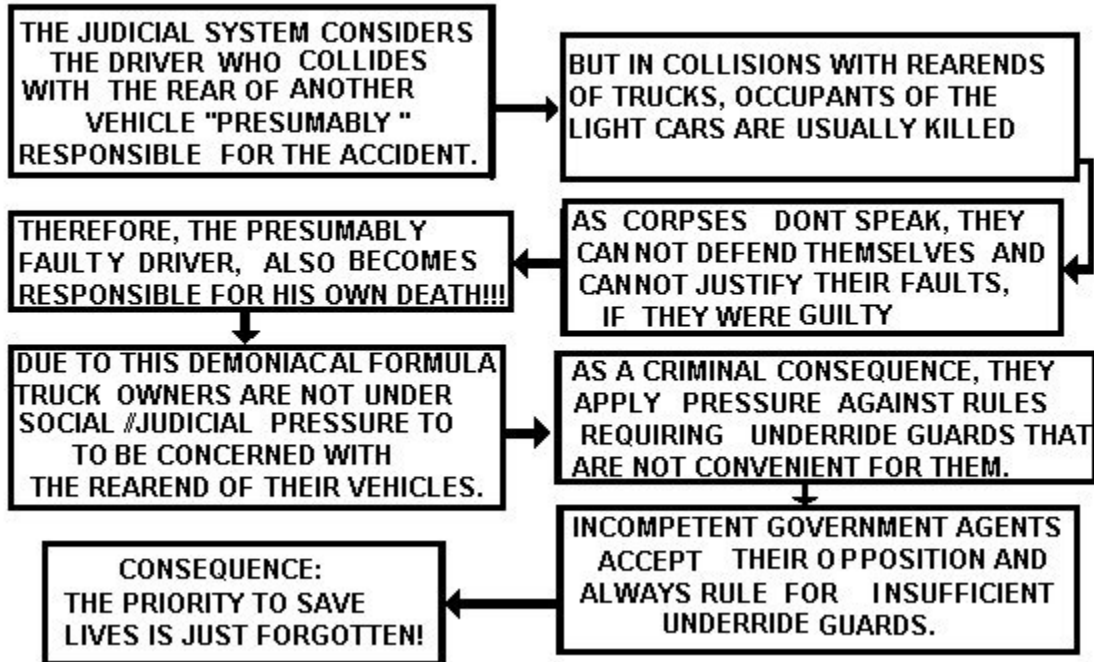
It has been almost twenty years since any improvements have been made on this safety standard and new regulations should be required reflecting advancements in technology. There are other countries worldwide that have developed stronger designs and standards and have participated in studies regarding safer practices, which should be reviewed and possibly adopted.

1. For example, the Insurance Institute for Highway Safety (IIHS) has shown that a Canadian trailer manufacturer, Manac, has developed a stronger underride guard design on trailers which they manufacture. <http://www.iihs.org/externaldata/srdata/docs/sr4907.pdf>
2. 1998 study, "Rear underride crashes kill thousands of people yearly worldwide. Underride guards did not follow the progress achieved by the automotive safety technology. Searching for solutions to this problem, two new guards have been designed and three crash tests carried out. A new articulated, an energy absorbing conceptual guard and a guard constructed according to the European (ECE-R58) regulation were tested. Both the new guards could avoid underride," <http://papers.sae.org/982755/>
3. The Intelliguard/Impact Project in Brazil tested energy-absorbing guards to 40 mph full and offset with computer models showing performance possible at 50 mph and more. Including a test with zero passenger compartment intrusion. <http://www.fem.unicamp.br/~impact/INTELLIGUARD.html> & <http://www.fem.unicamp.br/~impact/justice.htm> The **Death Flow Chart** from this website is copied and pasted below:

## HOW DOES JUSTICE WORK AGAINST SOCIETY?

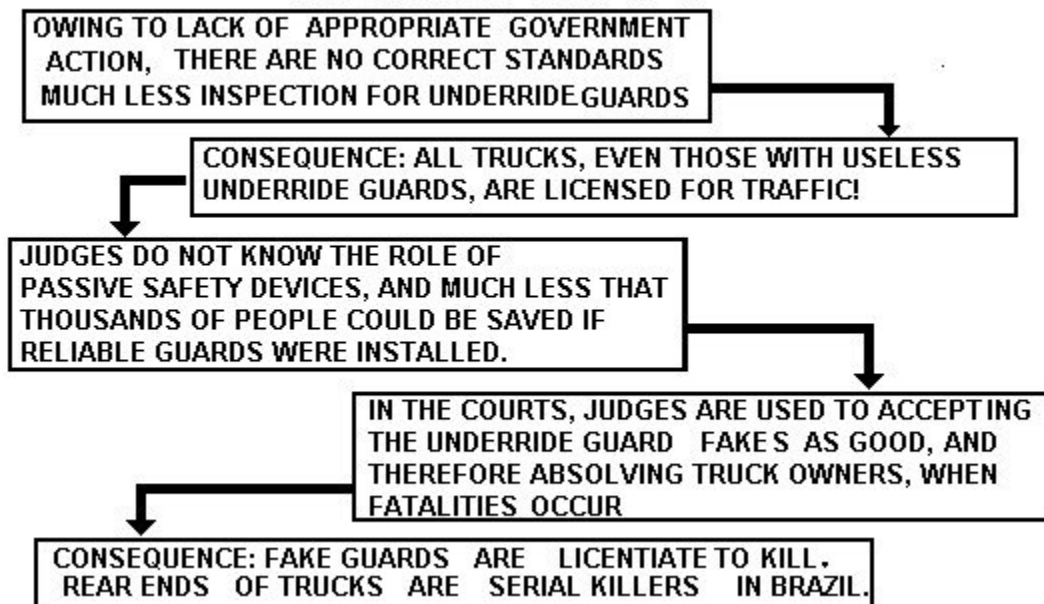
A VICIOUS CIRCLE: THE ROLE OF THE BLIND JUDICIAL SYSTEM

DEATH FLOWCHART Nº 1



**NOTE: PRIORITY SHOULD BE GIVEN TO SAVING LIVES. FURTHER DISCUSSIONS SHOULD BE HELD SOON, PREFERABLY WITH ALL INVOLVED PEOPLE PRESENT!**

THE DEATH FLOW CHART Nº 2



<http://www.fem.unicamp.br/~impact/justice.htm>

4. It is also known that the Monash University Accident Research Centre (MUARC) tested energy-absorbing guards to 75 km/h or 47 mph in the early 1990s. [http://www.monash.edu/\\_data/assets/pdf\\_file/0006/216924/muarc026.pdf](http://www.monash.edu/_data/assets/pdf_file/0006/216924/muarc026.pdf) See an image below of a MUARC energy-absorbing underride guard.



Problems with underride guard protection have been known for years with little or no progress. In March 1977, the following testimony was provided to Congress:

The 25 year-old federal “rear end protection” standard for devices on the backs of tractor trailers and trucks is “a sham.”

The IIHS crash test program makes clear, Haddon told the subcommittee, that “there is absolutely no engineering justification for rear end truck and tractor trailer designs that permit impacting cars to underride, with resulting penetration of their passenger compartments and massive, sometimes fatal, injury to human contents.”

Haddon called it a “tragic puzzle” that both the problem of needless passenger compartment penetration in auto-truck rear underride crashes, and the availability of solutions to it, have been known for years both to industry and government—yet, neither has acted to apply the solutions.”

“Blood has been shed, heads literally have rolled and countless thousands of Americans been injured because those agencies did not act. Further inaction would be inexcusable,” Haddon warned. <http://www.iihs.org/externaldata/srdata/docs/sr1206.pdf>

If this proposed rule is the best that DOT and NHTSA can provide after twenty plus years, my blunt response, in the immortal words of General Norman Schwarzkopf, is “Bovine Scatology.”

In order to improve upon the proposed rule, in addition to reviewing past research efforts, I would encourage and request that the DOT and NHTSA review the work that is currently being done by a Senior Design Team of engineering students at Virginia Tech. Their underride design will be presented at the May 5, 2016, Underride Roundtable at the IIHS Vehicle Research Center. Their design shows promise of greatly improving the current standard for a reasonable cost. Based upon their mid-year report, an estimated manufacturing cost of \$2,700 per trailer, when spread across a 15 year trailer life expectancy, would work out to be a daily cost of \$0.68. A small cost to save so many lives.

<http://annaleahmary.com/2015/12/senior-underride-design-project-mid-year-report-presented-by-virginia-tech-students/>

We have also worked with an accident reconstruction specialist, Aaron Kiefer, who has developed a design that will allow retrofitting an improved underride protection system to the current trailers on the highway. He believes that it will exceed the proposed standards, as well as the gas mileage requirements, and includes a **side guard**. The only thing lacking is testing of the design by the IIHS, for which we are attempting to raise money through our non-profit organization, AnnaLeah & Mary for Truck Safety. This should allow for immediate application of new safety standards for all trucks and trailers, including Single Unit Trucks, and not just the newly manufactured ones (two years out from release of a new rule). <http://annaleahmary.com/2015/09/innovative-combined-side-rear-guard-promises-better-underride-protection/>

We, also, received a research proposal from Dean Sicking (University of Alabama). He has indicated to us that he believes he can design an underride protection system which will prevent underride guard failures, and the injuries and deaths that occur as a result. Furthermore, he is confident that it can be done at much higher speeds than currently being proposed. He is the engineer that designed the soft wall technology for NASCAR—the SAFER Barrier—enabling race car drivers to walk away uninjured from crashes into the walls. Again, the only thing lacking is funding for his research.

<http://annaleahmary.com/2015/07/annaleah-mary-for-truck-safety-is-excited-to-begin-raising-money-to-support-nascars-safety-hero-dean-sicking-research-for-safer-truck-underride-guards/>

Let's not make the mistake of ignoring and squashing innovative research which could take us above and beyond what has been previously been required or even thought possible. We made that mistake for too many years when the use of seat belts were rejected.

<http://www.secondchancegarage.com/public/seat-belt-history.cfm> & <http://www.amazon.com/Car-Safety-Wars-Technology-Politics/dp/161147745X>

When we visited the Research & Design Center of Great Dane, a trailer manufacturer, in June 2014, the CEO, Dean Engelage, made the following comments so us, “Cost is not a factor,” and, “Safety is important to us,” and, “We are not competitive about safety.” In addition, other trailer manufacturers have indicated to the IIHS that they are working on improved designs. Thus it appears that at least some trailer manufacturers are willing to improve their designs and save lives. I have contacted each major trailer manufacturer and requested that they voluntarily increase their design to meet the Manac standard. Yet they have either not replied or let us know that they were waiting for the new regulations before proceeding.

Additionally, I would like to respond to the utilitarian logic approach that NHTSA has appeared to have applied to this issue. Their utilization of a cost/benefit analysis (called for by Executive Order 12866) is sadly lacking moral and ethical depth on the benefits side.

This type of logic was applied in 2000 by the Philip Morris Company in the Czech Republic when they funded a research study on the costs/benefits of smoking in the Czech Republic.

<http://www.mindfully.org/Industry/Philip-Morris-Czech-Study.htm> The study concluded that it would be more beneficial for the people of the Czech Republic to smoke than not. What was this startling conclusion based on? A cost/benefit analysis.

The results are summarized in Figure 1:

*Figure 1: The public finance balance of smoking in the Czech Republic in 1999 is estimated at +5,815 mil. CZK*

<b>Income and positive external effects</b>	<b>21,463 mil CZK</b>
Savings on housing for elderly	28,mil CZK
Pension & soc. expenses savings due to early mortality	196 mil CZK
Health care costs savings due to early mortality	968 mil CZK
Customs duty	354 mil CZK
Corporate income tax	747 mil CZK
VAT	3,521 mil CZK
Excise tax	15,648 mil CZK
<b>Smoking related public finance costs</b>	<b>15,647 mil CZK</b>
Fire induced costs	49 mil CZK
Lost income tax due to higher mortality	1,367 mil CZK
Days out of work related public finance costs	1,667 mil CZK
ETS related health care costs	1,142 mil CZK
Smoking (first hand) related health care costs	11,422 mil CZK
<b>NET BALANCE</b>	<b>+5,815 mil. CZK</b>

The study concluded that \$1,227 was saved in pensions, health care, and housing every time a smoker dies. [Photo and caption from <http://www.mindfully.org/Industry/Philip-Morris-Czech-Study.htm> ]

In comparison, let's look at how this approach could be applied to the underride issue. This type of cost/benefit analysis could lead us to conclude that it is not beneficial to require stronger underride guards because the benefits of keeping weak and ineffective standards for underride guards are greater than the cost of upgrading them to the best possible protection. What might those benefits be?

1. Save the trucking industry money by holding down manufacturing and installation costs.
2. Save the consumer money by holding down shipping costs.
3. Reduce medical costs by killing people at a younger age (and avoiding costly medical costs of the elderly population).
4. Preserve the Social Security fund by decreasing the number of people who draw from their account due to early Death by Motor Vehicle.
5. Improve the job market due to the decrease in the workforce from the elimination of workers through Death by Motor Vehicle.

In both cases, the conclusions lack common sense. I hope that we can agree upon that.

In other words, this kind of analysis could potentially require that we decide whether we are willing to fork over money to protect people from Death by Motor Vehicle. It forces us to choose between saving a life or saving costs. When that life is one of your loved ones, what would you choose?

In contrast, a cost-effectiveness approach may be a better solution because it compares the relative costs and outcomes (effects) of two or more courses of action. "Cost-effectiveness analysis is distinct from cost-benefit analysis, which assigns a monetary value to the measure of effect."  
[https://en.wikipedia.org/wiki/Cost-effectiveness\\_analysis](https://en.wikipedia.org/wiki/Cost-effectiveness_analysis) In this situation, the desired outcome of both courses of action would be an underride guard which did not fail upon collision with a vehicle. The two solutions could be compared based upon cost, but a performance standard of a successful crash test would guarantee that lives would be saved.



**\$1,227 ?**

**That's how much a study sponsored by Philip Morris said the Czech Republic saves on health care, pensions and housing every time a smoker dies.**

*photo: American Cancer Society full-page SF Chronicle advertisement 2aug01*

In conclusion, I would encourage the DOT and NHTSA to attend the Underride Roundtable on May 5, 2016, before issuing a final rule for the standards for underride guards. I would also like to propose that the Department of Transportation and NHTSA adopt a Vision Zero Policy for all traffic safety rulemaking and enforcement, including underride guards:

Vision Zero is a multi-national road traffic safety project that aims to achieve a highway system with no fatalities or serious injuries in road traffic. It started in Sweden and was approved by their parliament in October 1997.(1) A core principle of the vision is that 'Life and health can never be exchanged for other benefits within the society' rather than the more conventional comparison between costs and benefits, where a monetary value is placed on life and health, and then that value is used to decide how much money to spend on a road network towards the benefit of decreasing how much risk. [https://en.wikipedia.org/wiki/Vision\\_Zero](https://en.wikipedia.org/wiki/Vision_Zero)  
<http://www.monash.edu/muarc/research/reports/papers/visionzero>

Jerry Karth, February 14, 2016

[Note to FMCSA: If \$9.4 million is going to be used as the figure for the Value of a Statistical Life (VSL), then I would ask again that they immediately increase the motor carrier limited liability insurance to this level. And, because we have been told that Secretary Foxx has the authority and power to perform this administrative action, then it should be resolved quickly.]