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Judiciary Committee
Connecticut General Assembly
Re: Proposed Senate Bill 650 and House Bills 6848, 6962

March 10, 2015

Dear Members of the Committee,

I write to you in strong support of all three bills referenced above. I will be in attendance at the March 11, 2015 hearing and plan to give live testimony. Given the complex nature of the issues raised by the proposed legislation, I am also submitting the following written testimony. I have lived in this state for 12 years. My representatives are Toni Boucher, Tom O’Dea and Gail Lavielle. I am a licensed attorney in the state of Connecticut. I am a medical doctor and graduate of Yale Medical School. My field of research is developmental neurobiology. My former lab at the Yale Child Study Center was next door to the clinic where Adam Lanza was evaluated. I write not just in a professional capacity, but more importantly as a father concerned about the safety and welfare of all children.

“There can be no keener revelation of a *society’s* soul than the way in which it treats its children.”
- Nelson Mandela

“Your dead kids don’t trump *my* Constitutional rights.”
- Joe Wurzelbacher

“It’s cancer.” Just two words, but two words that carry enormous power. I knew exactly what it meant. In medical school we were taught how a cell develops mutation, evades immune response, replicates indiscriminately and eventually wreaks mass destruction. I understood the prognosis and what lay ahead. Despite all that knowledge, I had no idea how to tell my 5-year-old daughter. That is what most frightened me the day I was diagnosed. I was planning to train in pediatrics. My wife has a Master’s degree in child psychology. Nothing could have prepared us for that discussion. At the time, it felt like the most difficult talk we would ever have to share with our daughter. We were wrong.

“It’s a shooting,” my wife said, on her way to my daughter’s “locked-down” school. Just miles from Newtown, in hushed voices, parents spoke of mass casualties at Sandy Hook Elementary. My colleagues rushed to Danbury Hospital. Eighty house staff prepped 3 trauma teams, 4 emergency bays, and 6 operating rooms, but there was not one arrival. It’s an eerie feeling, standing at the door, anticipating chaos but instead left to contemplate what the silence means. There were plenty of doctors, just no child survivors. Eighteen children were pronounced dead at the scene. Two were evacuated, but both were declared deceased shortly thereafter. Sandy Hook’s 1st grade classrooms were riddled with .223 shell casings, bullets designed to kill a 6-foot-tall, 200-pound soldier in a Kevlar vest. For a 3 and 1/2-foot-tall, 50-pound, 6-year-old in a t-shirt, they are devastating, shattering bones on contact and instantaneously pulverizing internal organs, rendering anatomical landmarks useless for autopsy analysis.

It took 3 weeks to gather the courage to talk to our daughter about the tragedy in Newtown. Cancer was comprehensible. But innocent 6 year olds massacred? That was unfathomable. As my wife and I joined the public outcry of those searching for answers, we learned how it had happened, namely, the widespread availability of military grade weapons, lax public standards on gun storage, and cultural aversion to firearm regulation. But only recently have I begun to understand *why* it happened.

On December 14, 2012 a disturbed young man walked into a primary school and horrifically attacked 23 children. There were no fatalities. At the very same hour, across the globe, another young man entered an elementary school, this time assailing 20 children. Not one survived. The first wielded a knife. The second? A gun. The former occurred in China; a nation with 5 guns for every 100 citizens. The latter took place in the US, which boasts 15 times as many. In the month following Sandy Hook, US consumers purchased an additional 2.8 million guns, enough to outfit the entire Chinese active and reserve military.

In stark contrast, sales of switchblades remained minuscule, because under the Switchblade Knife Act of 1958, these weapons are barred from interstate commerce and possession is prohibited on all Federal lands. Let's compare the potential damage of a knife stab to the abdomen with that of a .223 bullet. A forceful direct thrust with a long blade may penetrate deep enough to lacerate the aorta, the largest blood vessel in the body, but any vascular surgeon can repair a bleeding artery. On the other hand, a single small arms projectile has enough force to not only penetrate the aorta, but then initiate a hydrostatic shockwave that literally bursts the heart and still has enough power to exit through the spine, a school wall and a parked car - which was the case at Sandy Hook.

Worse still, one entry wound often leads to multiple exit wounds. When the ribs are struck, they shatter into bone fragments which themselves become secondary projectiles. The extent of damage to the internal organs also depends on the type of bullet used. Under the Hague Convention of 1899 and the Geneva Convention of 1949, all bullets on the battlefield must have a full metal jacket (to prevent them from exploding within the body), however expandable bullets which cause significantly more injury are widely available for civilian use. When these bullets splinter into pieces, they act as tertiary missiles able to strike distant organs. No trauma surgeon in the world could repair such massive damage.

To better understand why a small bullet, less than 0.38 inches in diameter can cause more damage than a giant knife or even a 12 gauge shotgun shell, a quick review of physics is necessary. When an object strikes a person, its kinetic energy is transferred to the body. More energy means greater tissue damage. Under the 1st law of thermodynamics, energy can neither be created nor destroyed, only transformed. Energy equals 1/2 mass (weight) multiplied by the velocity squared. Stated more simply, increasing the bullet's speed has a greater effect than increasing its weight because change in speed is exponential, whereas change in mass is linear. Stated even more simply, a small fast bullet from an AR15 is much more damaging than a big slow bullet from a shotgun. The muzzle velocity of an AR15 is 3,250 ft/sec. In less than a second, a .223 bullet can span 8 football fields. Compare this to how long it would take a human to run the same distance.

A knife thrust penetrates with a force of 4 pounds per square inch. A bullet fired from an AR15 penetrates with 3,000 pounds per square inch. That is equivalent to a full SCUBA tank which requires 1/2 an inch of steel to keep such enormous pressures contained or put another way, at Sandy Hook, the pressure inside each 6-year-old victim's body was 100 times the pressure in a car tire carrying a 4,000 pound vehicle. That is why there were no survivors from Sandy Hook whereas across the globe, at Chenpeng Village there were no fatalities. With one pull of the trigger, all of the energy required to thrust a bullet to accelerate twice as fast as the speed of sound is transferred to the each child's body. Not even the most powerful "good guy" - Superman, can top that speed.

The overwhelming majority of gun-owners have never come face to face with such carnage. While every red-blooded American cheers when Dirty Harry pointed his gun at the "bad guy" and said, "this is a .44 Magnum, the most powerful handgun in the world and [will] blow your head clean off" before blasting away. In a milli-second, the audience may catch a wince, a squib explode, a red syrup filled balloon burst before the camera cuts back to Sergeant Callahan for his dramatic reaction shot. What viewers don't see is the crimson colored blood spurting from the carotid arteries of a decapitated cadaver surrounded by clumps of brain tissue lying in puddles of spinal fluid and strewn about the ground.

The real superheroes are the health providers on the front lines. They don't have the luxury to skip to the next scene. In real life, when a shooting victim arrives at the trauma bay a well-rehearsed team of 8 doctors and nurses instantly surround the patient, each simultaneously performing their pre-assigned task. At the head, the anesthesiologist puts an endotracheal tube down the victim's throat, while nurses on both sides insert full bore IV lines into the victims' arms, while another sheers off the victim's clothing for visual inspection which must be performed as quickly as possible so the others can tamponade the hemorrhaging and prep for emergency surgery. These are the true battle lines which doctors across the country face every single day.

In China, the standard issue service rifle is the Type 81, a derivation of the AK-47, while the US military uses the M16, derived from the AR-15. Both have a muzzle velocity of 3,000 feet per second, firing range greater than 6 football fields and accept 30 round detachable magazines. Both are widely available in 60 round per minute semi-auto versions to the general public and, not coincidentally, both have found favor among those bent on mass indiscriminate killing. In the second half of 2012, there were 4 such shootings, each using an AR-15. Given these assault rifles comprise less than 1% of firearms in the US, the probability that all 4 shooters chose this particular weapon by chance is 1 in 100 million.

Adam Lanza selected the Bushmaster XM-15 among a dozen weapons at his disposal to wreak as much carnage as possible. In 5 minutes, he was able to unleash a hail of 154 bullets. For perspective, that is twice the amount

used in the St. Valentine's Day Massacre which directly led to the National Firearms Act of 1934, regulating machine guns, short-barrel rifles, silencers, destructive devices (grenades and missiles) and "any other weapon" capable of being concealed. Congress required all NFA firearms to be registered and imposed a \$200 tax (\$3,500 in 2015 dollars), with full support from the NRA.

Adam Lanza killed 26 people, almost twice as many killed by Charles Whitman during his 40 minute shooting spree at the University of Texas. Once again, rocked by such violence, this incident led to the passage of the Gun Control Act of 1968, prohibiting purchases by felons and requiring sellers to be licensed. Meanwhile, 2 years have passed since 20 first graders were killed at Sandy Hook and yet the federal government has been rendered impotent by a vocal minority unable or unwilling to recognize the cause and scope of the problem.

In medicine, treating disease is impossible without first making an accurate diagnosis. Contrary to the oft cited, "guns don't kill people" adage, the fact is, they do. Placing moral blame on the "bad guy" does not make the instrumentality any more virtuous or any less lethal. Human behavior is far more complex than the simplistic dichotomy between "good" and "evil." Last year, five days after Christmas, a 2-year-old boy shot and killed Veronica Rutlege, his 29-year-old mother after she placed her loaded gun in a Walmart shopping cart. She was a nuclear scientist with a concealed weapons permit. A few months before, during her summer break, a 9-year-old girl shot and killed 39-year old Charles Vacca, after he handed her an Uzi submachine gun to shoot. He was a father of 4 and licensed firearm instructor. The year before, a veteran of the war in Iraq suffering from PTSD shot and killed 38-year old Chris Kyle, who in an effort to help his fellow soldier, had taken him to the shooting range for therapy. He was the most lethal sniper in US military history and posthumously became a national hero.

We are all prone to act irresponsibly, irrationally and at times with ill intentions. Even US Congresswoman, Reene Ellmers (R-NC) an ardent supporter of the 2nd Amendment, whose unsecured AR-15 rifle was stolen from her unlocked garage, is capable of making mistakes. And lest you think, I believe physicians don't do stupid things, consider Charles Bizilj. He gave an 8-year-old boy an Uzi to shoot at a gun show, who then proceeded to fatally shoot himself in the head. Dr. Bizilj is an emergency room doctor (the speciality that sees the most gun injury victims). He was also the boy's father.

Until Sandy Hook, 6-year-old Kayla Rolland was the youngest school-shooting victim. The assailant, Dedric Owens is still the youngest school shooter. In front of 22 first graders, he pulled out his uncle's gun, said, "I don't like you," and pulled the trigger. In 1893, the Supreme Court ruled that a child under the age of 7, "is conclusively presumed incapable of committing a crime." So who's the "bad guy?" A 2-year-old? A 6-year-old? A 9-year-old? A veteran with PTSD? The congresswoman? Or how about the gun permit holder, firearm instructor or Navy Seal sniper. The problem is not "bad people" - it's bad products.

The story of Katherine Hoover and her son Rhelin is a particularly chilling example. While eating dinner at their home, the Hoovers were treated to a show by William Dehayes, a longtime friend and father of 3. He was quite "proud" of his new hobby, gun-sliding. Believing his revolver was not loaded, he spun it on his finger. Before placing it back in the holster, the gun inadvertently "went off." One bullet, one misfire and in an instant, two lives were extinguished. Katherine was shot in the head. She was 5 months pregnant. Performing a Caesarean section on a lifeless body, doctors delivered Rehlin. He died 30 minutes later. Two months earlier, William wrote the following on his Facebook page, "Left My Gun Alone Today. It Didn't Kill Anyone... Yep, proving once again that the lethality of an object is entirely dependent on the intent of the operator." But after the shooting he broke down in the interrogation and wept, "I haven't slept in 3 days trying to figure out how the hell [the gun] went off. I don't know. I mean them damn guns. The shotgun goes off when *it* wants to. I almost blew my damn head off twice."

William now asserts that the gun, "goes off when *it* wants to" meaning guns kill people. Even if we accept his previous thesis that only people kill people, who do we blame? The county prosecutor decided not to file charges. The medical examiner attributed both deaths to homicide (which requires intent). So the state's attorney believes the gun is responsible, while the coroner believes the person to be. Every year more than 1500 gun deaths are ruled accidental. In reality the number is far greater (Katherine and Rhelin would not have been included based on the medical finding of homicide). Are thousands of senseless gun deaths simply the "cost of freedom?"

The Consumer Product Safety Commission regulates more than 15,000 items, from cribs to Coca-Cola (both subject to dozens of recalls). Mysteriously, the most dangerous product on the market is conspicuously absent from that list. In 1999, after 6 reports of children being impaled by dive sticks, 12 million toys were destroyed before they were redesigned and allowed back on the shelves. That year, an illegally purchased Hi-Point Carbine was used in the Columbine massacre of more than a dozen school children. Not one has since been recalled. The

closest it came to any regulation occurred when they were briefly banned in 2013 by New York's "SAFE Act." A few months later, a detachable pistol grip shield was marketed to skirt the law and Hi-Points are legal once more.

In medical school, we were trained to ask 3 safety questions: "do you have your vaccines, do you wear your seat belt, and do you keep firearms at home." If the last is answered affirmatively, we counsel **all weapons be locked and stored separate from ammunition**. Despite such advice being identical to NRA recommendations, in an effort to conceal guns from the sphere of public health, gun lobbyists have effectively sought to bar doctors from inquiring about them. In Florida, doing so is a *criminal* act. Rejecting the 1st Amendment speech rights of physicians, according to the 11th Circuit Court of Appeals, "the practice of good medicine does not require interrogation about irrelevant, private matters."

William the gun-slinger, was taking prescription Methadone, Hydrocodone and Carisoprodol for back-pain. His doctor was permitted to prescribe 3 powerful narcotics (any combination of which is contraindicated) but legally could not give him a few words of safety advice. Katherine and her son were killed in Florida. Was the bullet in her brain, not a matter of medical concern?

To fulfill our oath to "do no harm," it is our duty to do all we can to prevent injury before we turn to treatment. The words of a pediatrician can save more lives than the hands of even the most talented trauma surgeon. So was the case for 8-year-old Christopher Parks, who, worried of his mother's reaction to his 3rd grade report card, went into her room, climbed onto the dresser to get her loaded gun (which was hanging by a nail on the wall), straightened the doily he had wrinkled, and then fatally shot himself in the head. Whether it be suicide, homicide or accident, gun safety is not a political issue; but a public health crisis.

While talking heads spout meaningless soundbites in the comfort of a television studio, they are completely oblivious to the horror of intubating a child whose lungs are rapidly filling with blood while another is pumping hard enough to break their ribcage and mechanically squeeze the dying heart to maintain circulation, while another charges up the defibrillator and delivers 1000 volt electric shocks every 30 seconds, in a desperate attempt to stave off brain death, knowing full well the brief window of resuscitation has long since passed before resigning themselves to the inevitable and preparing to tell a mother that her child died from a fatal gunshot wound. If the 11th Circuit's justices were to spend one night in an ER, they'd learn what the "practice of good medicine" means.

Throughout history, as we gain knowledge, we learn the true causes of our problems, the first step to formulating solutions. In the 18th century, smallpox was thought to be passed by the menstrual blood of a witch. The virus killed half a million Europeans every year, including two child kings, Louis of Spain and Peter II of Russia. In 1796, nearly 10% of infants died from smallpox. That year, Edward Jenner inoculated an 8-year-old boy with pus from a milkmaid's cowpox blister. He named it vaccine after the Latin word for cow. Vaccines have spared hundreds of millions from the scourge of smallpox and were considered so vital to the nation that Congress passed the Vaccine Act of 1813 to maintain a safe and steady vaccine supply; the first consumer protection law in history. In conjunction with strict enforcement of mandatory vaccination statutes, 167 years later, smallpox was eradicated from the planet.

In the 19th century, tuberculosis was thought to be caused by indecency and only capable of attacking immigrants. Then Louis Pasteur developed germ theory. The solution, public hygiene, has saved tens of millions. Ordinances mandating proper sewage removal have greatly contributed to the near doubling of US life expectancy in less than 100 years.

In the 20th century, lung cancer was thought to be hereditary in origin. Then US Surgeon General Luther Terry exposed the relationship between cigarettes and cancer. The solution, smoking reduction, has saved countless millions. Regulation of the tobacco industry's marketing and advertising resulted in a 50% reduction in the incidence of male lung cancer since the 1960's.

Time and again, scientists, physicians and as we shall see, attorneys worked together to elucidate the problem and implement the solution. Jenner, Pasteur and Terry came from different fields, immunology, microbiology and epidemiology, respectively but their practice was the same - propose hypotheses, collect data and replicate results, essential elements of the scientific method. With this model in mind, Congress passed the Public Health Service Act of 1944, from which the Center for Disease Control and Prevention was established to protect and promote health and safety. Its first effort was to combat malaria. Federal funds were allocated for the CDC to research solutions and coordinate mosquito control operations. In 1947, there were 15,000 reported cases. By 1951, malaria was eliminated across the country. Then the CDC set its sights on syphilis, a scourge that left victims with horribly disfigured faces, permanently marking them as social pariahs. In less than a decade, the CDC effectively conquered syphilis.

The 20th century witnessed the greatest and steepest reduction in mortality rates throughout all of human history. At the start, in some cities, parents lost a third of their offspring before the age of 1. Today the infant mortality rate is 0.6%. In 1907, for every 100,000 children that reached their first birthday, 1,418 died before turning five. Today it's 26. Before the public health movement, 10% of children didn't make it to 15. Today 99.73% survive.

Before the CDC, we relied on a 19th century elixir of quinine, soda and sugar otherwise known as "tonic water" to treat malaria. However dosing quinine is difficult and too much can cause heart block and hearing loss. The standard protocol when syphilis decimated one's nose was a 16th century surgical technique in which the upper arm was sewn to the face and strapped in place where it remained until new skin grew over the nasal cavity.

Today, the CDC promotes insect spray and condoms to *prevent* malaria and syphilis. While we still drink gin and tonic, thankfully we no longer sew patients arms to their faces. We are incredibly fortunate to live free of the many scourges that have plagued man since the dawn of time. Now, imagine an alternate universe where Congress had blocked the CDC from studying infectious disease control for two decades. Where would we be today? How many would have needlessly suffered and died? And yet, in 1996, Congress did just that; threatening to strip the agency's funding unless it placed a uniform ban on all firearm research - essentially forcing science back to the era of superstitious and wrongheaded explanations for society's ills.

Despite these efforts to cast scientific inquiry as a threat to civil liberty, the courts have routinely ruled that public health and safety measures are not only consistent, but often necessary for the proper function of a free society. In 1905, Henning Jacobson challenged a Massachusetts compulsory vaccination law, maintaining his *individual* right to refuse vaccination without paying a fine to which Supreme Court Justice John Marshall Harlan countered; the *community* maintains the right to protect itself from the threat of injury and disease from such individual. Acknowledging that under the 8th Amendment's "cruel and unusual punishment" clause, vaccines have the potential to violate one's ultimate liberty - life (Jonathan Edwards, early American theologian and adamant inoculation supporter, died after inoculating himself), he nevertheless declared, "there are manifold restraints to which *each* person is necessarily subject for the *common* good."

A few months earlier, in New York, Katie Moeschen challenged a mandate to remove her single tenement yard "sink" (nothing more than a basin and drain pipe to the public sewer, seldom flushed despite being shared by 45 tenants) and install one water closet for every two families, arguing that the financial burden would devastate not just her but the entire real estate market. Justice O'Brien disagreed; "for the suppression of a threatening danger to the public health, the most drastic requirements of the Legislature... [may be sanctioned] in view of the evil sought to be overcome." Acknowledging his decision would wipe out *this* defendant's equity contrary to the 5th Amendment's "takings clause," the court nevertheless held that forcing property owners to incur remedial costs fell well within the confines granted to the state by the 10th Amendment. These decisions are not isolated to the early 19th century progressive era, but instead rest on a deep body of legal doctrine known as the "police powers" under which the rights on an individual may be outweighed by the health, safety and general welfare of the public.

Almost one hundred years later, Phillip Morris challenged a judgement of more than \$50 million in punitive damages, relying on statutory immunity for adequate warning to deny negligence. In other words, they argued the company should not be held liable for Patricia Henley developing lung cancer because they complied with the Cigarette Labeling and Advertising Act of 1965. It's an ironic argument, given that at the time of adoption, they fiercely challenged mandatory warnings as violating the 1st Amendment and according to US Senator Barry Goldwater, "interfering with freedom." Paying homage to Chicken Little, Bowman Gray Jr., chairman of RJ Reynolds threatened, "these bills, if enacted, will have a profound impact upon this great industry... [and] produce repercussions which would be felt throughout the country's economy." In a theme we will see repeated, he added, "we do not believe any government action is necessary." Of course, the law did nothing to stop their marketing to children for the next 30 years, via the "smooth character" of a cool camel named Joe.

These cases illustrate a consistent pattern. Individuals and corporations argue that holding them responsible for protecting public health would rob them of liberty and destroy the free market system. Despite the simplistic characterization of the founders as a monolithic group that enshrined the principle of "individual freedom" over "government tyranny," the Constitution does not protect absolute and unfettered rights. As the previous cases demonstrate, the liberties enumerated in the Bill of Rights often conflict with one another. Instead, their genius was in creating a long-lasting framework which balances the interests of the people *and* the state. Note, the parties to the previous cases are doing just fine. In 2014, Reynolds American announced the purchase of Lorillard Tobacco Company for \$27 billion. In 2011, Altria (successor to Philip Morris) reported \$24 billion in revenue and New York City's total property value is currently estimated to be over \$1 trillion.

Social standards change over time. At the turn of the last century, city dwellers were comfortable with defecating in public. Dodging feces in the street was considered part of daily life. That is what gave rise to the tradition of men walking on the curbside when accompanying women, still followed to this day despite the fact that they no longer have to worry about soiling their dresses.

No one washed their hands. Typhoid Mary infected 50 people working as a cook for wealthy New York families, because she admittedly didn't understand the purpose of hand-washing. Even President James Garfield was a victim of this ignorance. Officially he was assassinated by a bullet, however he likely would have survived had it not been for doctors repeatedly placing their dirty fingers into his open wound.

Fifty years ago, dentists were still recommending their favorite cigarettes. In 1971, the CEO of Philip Morris appeared on "Face the Nation" confidently assuring pregnant women that smoking was completely safe and actually good for mothers who'd "prefer smaller babies." **Fifty years from now, we will look back in credulity with our cavalier attitude about gun safety and total disregard for innocent lives.**

Liberty does not exist in a vacuum. A free society rests equally on political autonomy *and* social responsibility. Individuals are not free to expose others to contagious disease. Landlords are not free to subject tenants to squalid conditions. Businesses are not free to deceive customers. The courts have placed restrictions on the physical body, land and commerce. Are guns to be treated differently than every other aspect of our lives? Does the 2nd Amendment trump the 1st, 5th, 8th and 10th Amendments? I do not deny the individual right to keep and bear arms. However, the founders did not intend this right to be free of *any* and *all* regulation and restriction.

I respectfully urge you not to be swayed by simplistic and naive arguments - i.e. "guns don't kill people, people kill people" or laws only punish the "good guy" or every gun owner practices gun safety or rules are unnecessary because people voluntarily act with reasonable care or the 2nd amendment prohibits any restrictions on the use of firearms. If nothing else, consider this - if the legal gun owners in this essay had simply kept their weapons locked, every man, woman and child mentioned above would still be alive today.