

Excessive Noise at Movie Theatres
Testimony and supporting documentation relating to SB 287
AN ACT CONCERNING THE MAXIMUM DECIBEL LEVEL AT MOVIE THEATRES

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Possibly you (or your friends) have been to the movies lately and have experienced what we have endured: painfully loud noise, some "off the chart," as I describe below. Perhaps you've seen young children sitting in the theater with their hands over their ears to protect themselves from painful sound and parents removing their children from the theater. Beyond loud movies themselves, trailers (a.k.a. previews) and advertisements have been identified as especially earsplitting.

Excessively loud noise can not only be painful but can cause ringing in the ear or tinnitus. Long-term exposure can cause hearing loss. Some people who have hearing loss experience a malady known technically as "recruitment," which translates into a lower threshold of sound they can comfortably tolerate. According to the American Academy of Otolaryngology, "sounds above 85 decibels can cause permanent hearing loss" for children. Similarly, WebMD notes that sounds above 85 dB -- similar to that emitted by a gas-powered lawn mower -- are harmful, depending on how long and how often you are exposed to them.

Why should anyone seeking enjoyment in a movie theater have to experience painful sound, sustained discomfort, and possibly hearing loss?

The controversy about loud trailers has supposedly been "addressed" by the Trailer Audio Standards Association (TASA), but we strongly believe the result is terribly lame. This audio standard was adopted in 1999 at the request of The



National Association of Theatre Owners™

IN-THEATER MARKETING GUIDELINES

National Association of Theatre Owners (NATO) and last revised in 2001. The Motion Picture Association of America is responsible for certifying theatrical trailers as TASA compliant.

TASA defines an upper limit in terms of decibels (85 being the max), although, as they explain, there are different levels of comfort (I would say discomfort) for different frequencies of sounds at 85 DB. The standard defines the trailer volume

as a decibel average over the entire trailer -- a critical measurement. Since it's the average over the entire trailer, the Association admits that, to quote from its website, "the trailer with more quiet spaces can have louder explosions and still comply with the TASA Standard." How's that for a cop-out? No peak level is even set. In theory, therefore, half of the trailer could be silent with subtitles and the other half could run at 170 dB. It's equivalent to driving from Danbury to Hartford on I-84 at an average speed of 55 mph, with periodic and sustained bursts to 100 mph!



My colleague Arnold Gordon and I certainly have are doubts that the trailers' loudness is consistent with the maximum target of 85 DB average through the trailer. Our measurements (as described in our October 23, 2013, Opinion Piece published in the Stamford Advocate/Greenwich Time) noted that "Previews were consistently between 75 and 100 dB with sustained bursts as high as 100 to 110 dB.

The bill under consideration, SB 287, proposes that no movie theater should exhibit or show any moving picture film or preview film that exceeds eighty-five decibels. With all due respect, we would suggest a minor amendment such that the sound from a film or preview or advertisement should not exceed 85 dB at peak. With modern sound measuring equipment, compliance with such a rule would be relatively easy to check.

Why do the theater owners find it necessary to "turn up the volume to excessive levels?" Patrons can certainly hear the dialog and accoutrements at the more moderate levels suggested. Why do the trailers have to be shown at even higher levels than the main features, which the TASA standard on trailers implies?



This machine is basically a large computer, attached to a projector. The movies arrive on a hard drive that is then inserted into the machine. The film companies send key codes so that each movie can only be shown on a particular machine and within certain dates. The theater then shows the movies by operating the touch-screen computer -- or by pushing buttons on a phone.

Can the volumes of trailers and movies be easily controlled or are they pre-ordained by the theater owners, MPAA and/or film distributors? Of course they can be controlled. Today's state-of-the-art digital projection systems are interactive, complex, computerized "gadgets" that use server interfaces. This allows pre-programming of decibel levels for

each trailer and main feature. Basically, you set it and forget it. So it works well for 2 screens or 15 -- just program each auditorium ahead.

A senior representative for a small, local, independent theater in Stamford noted that his firm recently invested in a low-end digital system and hence the volume must be manually changed in each respective projector booth. With two employees working, they are not able to freely leave the concession and ticket area to monitor the volume of the movies and trailers. In my view, this helps underscore the problem.

Yet, at the nearby, independent Avon Theater (which undoubtedly has more sophisticated equipment), I was told directly by the projectionist that he controls the entire process ahead of time via the computer interface. On February 25, 2014, I had a discussion with Adam Birnbaum, the Avon's Director of Business Development and Film Programming, that the "goal of the Avon Theater is to have the dB level to be logical and in line with the desired comfort levels of our patrons. With our digital projection system, which is about a year old, we can set the volume for any film and/or trailer so as to be consistent with this goal. We never receive complaints from our patrons regarding excess loudness or volume at the theater. This is indicative that we have achieved the desired comfort levels that our patrons prefer."

This past week, I measured the sound level for four trailers shown at the Avon. The average dB level for the trailers was been 67 and 72. And the peak levels were in the 78-83 range -- in line with the amendment to SB 287 I proposed. SO IT CAN BE DONE!

The FCC has mandated a ban on the decades-old practice by which TV broadcasters inflated the volume on ads. To protect the health and comfort level of the public, why is there no limitation on the overall sound level at the cinema? After all, theatergoers cannot "turn down the volume" as they can for TV. However, states must regulate movie theater volumes, as this is not related to over-the-air transmissions (like TV) that are monitored by the Federal Government.

In summary, it's obvious that the sound of movies and trailers at movie theaters today is not consistent with either audience comfort or public health -- for millions of adults and especially children across the country. The current TASA standard is completely ineffective in establishing safe and appropriate noise levels, which should be gauged on both an average and peak intensity basis. Hence, the standard is virtually useless and explains why loudness in movie theatres requires regulation per SB 287, the bill currently under consideration.

Opinion Piece published on the Greenwich Time and Stamford Advocate on October 22, 2013:

Movie trailers are teasers to hearing loss

Movie-going is one of the most popular art forms and sources of entertainment for Americans. Even with the ability to download films to electronic devices, nothing compares to the silver screen for visual, larger-than-life enjoyment. However, what spoils the experience is the painfully loud volume of the previews, commercials and even some feature films.

For years, there has developed a huge difference between the decibel level for trailers vs. that for the feature. It is not only unpleasant but harmful as well, especially to children. Complaints to theater managers are to no avail. We have measured the decibel levels in a theater using a calibrated sound meter. Previews were consistently between 75 and 100 dB with sustained bursts as high as 100 to 110 dB. These absurd levels are not only extremely uncomfortable but are associated with hearing loss. On the other hand, feature films averaged about 15 dB lower in each case, or only one-third of the perceived loudness vs. the trailers.

Noise pollution is a serious public health problem. Cynics will advise using ear plugs or avoiding the auditorium until the main feature begins, but neither is acceptable.

Amid pleas for state legislatures to pass appropriate laws limiting the decibel level in movie theaters, and to require a screened "Excessive Noise Warning" about the associated dangers, representatives from the National Association of Theatre Owners and the Cinema Advertising Council told us more than three years ago that legislation is unnecessary, since the industry would correct the situation on its own. They must have been talking about theaters on Mars!

The FCC has mandated a ban on the decades-old practice by which TV broadcasters inflated the volume on ads. Similar action should be taken in the case of trailers and commercials in theaters. Moreover, a maximum decibel level should be set to prevent the theaters from augmenting the volume on the main feature to match the loud trailers. Theatergoers cannot "turn down the volume" as they can for TV.

State legislators, theater chains (<http://ncam.wgbh.org/mopix/chains.html#us>), and members of the National Association of Theater Owners (www.natonline.org) should be made aware of these issues so actions can be taken.

Concerned citizens no longer wish to be a captive audience for ultra-high, injurious sound volume.

Arnold J. Gordon, Ph.D, is from Greenwich and William R. Young, Ph.D., is a Stamford resident.

The following letter illustrates the ability of the movie theater to turn down the volume at will -- if they don't have the most sophisticated equipment AND if they have the will/personnel to do so.

February 24, 2014

Mr. Young,

Thank you for patronizing our theatre.

I am sorry the trailer attached to our movie was so loud. We often get requests from studios to attach certain trailers to our movies. The trailer is loud on this movie, but the movie is quieter. (Not unlike TV shows, and commercials) As you noticed I'm sure, we operate an old theatre (est. 1927). Due to this, the construction of the main screen does not have the acoustical properties many modern theatres do. We actually have a project in the next few months that will hopefully address part of this problem. Monuments Men is in the main screen, we typically keep the volume a little higher, due to the acoustical problems we have, we often get requests to turn it up, because they cannot hear (understand) the dialogue.

While some theatres may have sound equipment that allows them to automate the volume between trailers and features, our equipment does not. Upgrading this can be very costly to the theatre, especially after the extensive investment we have had to make recently to go digital to stay in business. Our volume must be manually changed by hand in each respective projector booth.

As we only typically have one to two trailers per feature, and Monuments Men in particular has only one, we leave the volume adjusted for the main feature.

In addition, on Sunday in particular, there were only two employees working, and as patrons are generally still buying tickets and concession during the trailers of the movie, they are not able to freely leave the concession and ticket area to monitor the volume of the movies.

I am sorry a better solution could not be found, we too are frustrated by the varying volumes our trailers are provided to us.

Thank you,

Jesse Chianelli
Project Assistant
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Background Information -- Excessive Noise at Movie Theatres

Possibly you (or your friends) have been to the movies lately and have experienced what we have endured: painfully loud noise, some "off the chart," as I describe below.

The controversy about loud trailers has supposedly been "addressed" by the Trailer Audio Standards Association (TASA), but we strongly believe the result is terribly lame. The audio standard was developed by the Trailer Audio Standards Association at the request of The National Association of Theatre Owners (NATO). The Motion Picture Association of America will approve theatrical trailers certified as TASA compliant. TASA was formed in 1996, its original standard was adopted in 1999, and it was last revised in 2001.

<http://www.tasatrailers.org/whatis.html>

As you can see on this webpage, TASA defines an upper limit in terms of decibels (85 being the max), although, as they explain, there are different levels of comfort (I would say discomfort) for different types of sounds at 85 DB. It is frequency dependent, meaning that it's a complex subject and related to the specific sound frequencies.

The loudness is based on the Leq_m measurement, which defines the trailer volume as a decibel average over the entire trailer. Since it's the average over the entire trailer, the Association admits that, to quote from the TASA website, "the trailer with more quiet spaces can have louder explosions and still comply with the TASA Standard." How's that for a cop-out? No maximum level is even set.

<http://www.tasatrailers.org/leqm.html> In theory, half of the trailer could be silent with subtitles and the other half could run at 170 dB. It's like the fox guarding the chicken coop.

We certainly have are doubts that the trailers' loudness is consistent with the maximum target of 85 DB average through the trailer. Our measurements (as described in our Opinion Piece published in the Stamford Advocate/Greenwich Time) noted that "Previews were consistently between 75 and 100 dB with sustained bursts as high as 100 to 110 dB." We had a standard sound meter, as we were not able to obtain an Leq_m meter.

We believe many trailers have peak sound levels in excess of 120 dB.

According to the American Academy of Otolaryngology, "sounds above 85 decibels can cause permanent hearing loss" for children. Please see factsheet at <http://www.entnet.org/healthinformation/noise-induced-hearing-loss-in-children.cfm>

WebMD notes that, in general, sounds above 85 dB are harmful, depending on how long and how often you are exposed to them. <http://www.webmd.com/a-to-z-guides/harmful-noise-levels>

This same article presents the following reference table of the decibel level of a number of sounds.

Noise levels	
Noise	Average decibels (dB)
Leaves rustling, soft music, whisper	30
Average home noise	40
Normal conversation, background music	60
Office noise, inside car at 60 mph	70
Vacuum cleaner, average radio	75
Heavy traffic, window air conditioner, noisy restaurant, power lawn mower	80-89 (sounds above 85 dB are harmful)
Subway, shouted conversation	90-95
Boom box, ATV, motorcycle	96-100
School dance	101-105
Chainsaw, leaf blower, snowmobile	106-115
Sports crowd, rock concert, loud symphony	120-129
Stock car races	130
Gun shot, siren at 100 feet	140

A clap of thunder from a nearby storm (120 dB) or a gunshot (140-190 dB, depending on weapon), can both cause immediate damage.

<http://www.dangerousdecibels.org/education/information-center/noise-induced-hearing-loss/>

Many consider 115 dB and higher the threshold of pain and could result in permanent hearing damage. <http://voices.yahoo.com/what-osa-relates-sound-levels-37063.html>

Who should be responsible? It's clear that NATO (CEO is John Fithian) and the MPAA (CEO is former US Senator Chris Dodd) have a strong relationship and work together on the TASA standard. Hence, we believe they should carry the burden. Enforcement at the movie theatre level would be difficult. However, since most theatres today have switched to digital projection/digital sound, we would imagine the technology exists (or could be easily developed) so that theatres would not be able to project movies above the sound level set by the NATO and the MPAA. Alternatively, why not have audio surveillance devices which can be checked automatically as a way to monitor theatre compliance? It's probably no more expensive than the prevalent video surveillance cameras.

In summary, even if trailers do adhere to the current requirement, it's obvious that this TASA standard is not consistent with either audience comfort or public health – for adults or especially children. Moreover, without a maximum peak level of sound specified, the standard is virtually useless and explains why loudness in movie theatres requires regulation.

In a real life situation, how is the decibel level of trailers and movies set?

In the old, 35-MM movie days, the volumes could be adjusted by hand while the movie was projected.

Today's digital projection systems are interactive, fancy computerized "gadgets" that use server interfaces. This allows pre-programming of decibel levels for trailers and main features. Basically, you set it and forget it. So it works well for 2 screens or 15 -- just program each screen ahead.

The theatre receives a complex, proprietary hard drive (DCP, or digital cinema package) from the movie distributor. It arrives in a padded pelican case. The drive is inserted into the server system, and the projectionist enters the appropriate information when prompted by the program. Among the data that needs to be inputted are volume controls and a special code -- obtained from the distributor to make certain the movies aren't copied or shown where they're not supposed to be -- simply protecting their copyrighted theatrical productions. Most of today's theatres use DCP or similar technologies.

Here is a more learned description from Wikipedia: How Digital Cinema Works

In addition to the equipment already found in a film-based movie theatre, a DCI-compliant (Digital Cinema Initiative) digital cinema screen requires a digital projector and a computer known as a "server."

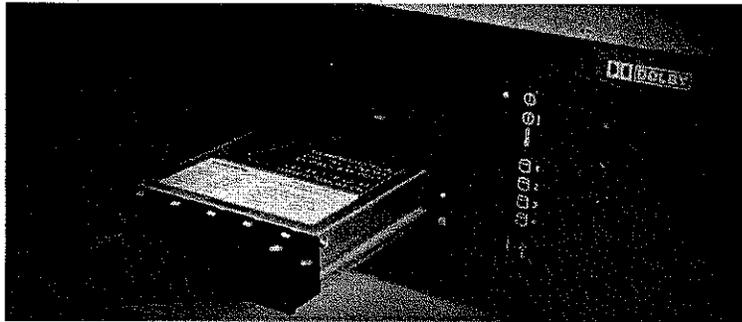
Movies are supplied to the theatre as a digital file called a "Digital Cinema Package"(DCP). For a typical feature film this file will be of the order of 200-300GB and may arrive as a physical delivery on a conventional computer hard-drive or via satellite or fiber-optic broadband. Currently (Feb 2013) physical deliveries are most common, but this may well change in the near future. Advertisements and trailers are also supplied as DCPs but, because of their much smaller size, these will normally be supplied on DVD-ROM, USB stick or by internet download.

Regardless of how the DCP arrives it first needs to be copied onto the internal hard-drives of the server, a process known as "ingesting". DCPs can be, and in the case of feature films almost always are, encrypted. The necessary decryption keys are supplied separately, usually as email attachments. Keys are time limited and will expire after the end of the period for which the title has been booked. They are also locked to the hardware (server and projector) that is to screen the film, so if the theatre wishes to move the title to another screen or extend the run, a new key must be obtained from the distributor.

The playback of the content is controlled by the server using a "playlist". As the name implies this is a list of all the content that is to be played as part of the performance; the playlist will be created by a member of the theatre's staff using proprietary software that runs on the server. In addition to listing the content to be played the playlist also includes automation cues that allow the playlist to control the projector, the sound system, auditorium lighting, tab curtains and screen masking (if present) etc. The playlist can be started manually, by clicking the "play" button on the server's monitor screen, or automatically at pre-set times.

http://en.wikipedia.org/wiki/Digital_cinema

Here are a few pictures, showing the server box with hard drive being inserted, system setup in projection booth, and typical prompt screen.



Thumbnail	Title	Year	MPAA Rating	Runtime	Audio	Subtitles
	Pinocchio	1936	G	83:00	2-Track	English
	Snow White	1937	G	83:00	2-Track	English
	The Prince and the Pauper	1937	G	83:00	2-Track	English
	The Wizard of Oz	1939	NR	101:00	2-Track	English
	The Sound of Music	1965	G	174:00	2-Track	English
	The Sandlot	2003	PG	98:00	2-Track	English
	The Hot Chick	2002	R	90:00	2-Track	English
	The Hot Chick	2002	R	90:00	2-Track	English
	The Hot Chick	2002	R	90:00	2-Track	English
	The Hot Chick	2002	R	90:00	2-Track	English

I have personally measured the dB level of trailers at the Avon Theater. The average dB level is on the order of 67-72 dB, with a peak level of about 78-83 dB.

On February 25, 2014, I had a discussion with Adam Birnbaum, the Avon's Director of Business Development and Film Programming, that the "goal of the Avon Theater is to have the dB level to be logical and in line with the desired comfort levels of our patrons. With our digital projection system, which is about a year old, we can set the volume for any film and/or trailer so as to be consistent with this goal. We never receive complaints from our patrons regarding excess loudness or volume at the theater. This is indicative that we have achieved the desired comfort levels that our patrons prefer."

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