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**SteveGass**  
Member

**SawStop - Straight from the horse's ....**  
#596526 - 08/16/03 12:42 PM

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Reged: 08/16/03  
Posts: 11

Just got around to checking for new discussions related to SawStop and the recent one here was a doozy. After reading through all 120 or so posts, there were a few things that I thought should clarified.

First, many folks seem to think that we chose to file the petition because we had not gotten interest in our saws to start production. This is simply wrong. We have received pre-orders for almost a million dollars worth of saws, and our first production run is already sold out several times over. Keep in mind that these are orders for saws sight unseen from a new company. Our biggest challenge is and has been ironing out all of the design details that have to be settled and making the manufacturing arrangements that need to be made to build a brand new table saw, not getting orders. That said, we expect to ship the first production run of saw shortly after the first of the year - which is quite a while later than we initially thought it would be.

Second, people seemed to be using the number \$300-400 as the cost to add SawStop to a table saw. Comparing our contractor's saw to the closest equivalent saws, a Delta or Jet contractor's saw, the actual price difference is more like \$100-150. The cost to add the system to saws sold in higher volumes, such as benchtop units, would be even less. As you might imagine, when there is some competition, the cost is likely to go down further.

With regard to the petition, I find it remarkable that not one of the posts directly addressed that question of how the petition will be judged - i.e. how does the CPSC decide whether to grant it or not? Assuming for the sake of argument that the technology works as we have described, the issue will largely be a question of whether the cost of the injuries prevented or mitigated by the standard spelled out in the petition would exceed the cost of implementing the standard.

In this case, I believe it is very clear that the cost of table saw injuries far exceeds the cost to implement SawStop on all table saws. Just for context, I believe it is likely that the economic cost of injuries on table saws is greater than the purchase price of the saws. In other words, the annual market for table saws in the U.S. is around \$150-200 million. I believe that the economic cost of injuries sustained by users of table saw every year could well be even greater than that. It is the tremendous economic cost of these injuries, not to mention the personal suffering, that I believe makes a requirement justified from a societal standpoint.

That said, if manufacturers would have offered SawStop, or something similar of their own creation, to address the problem of table saw injuries, even as an option, we would not have filed the petition.

If anyone has other specific questions that haven't been answered, I will do my best to try and respond.

Steve Gass - Inventor and President of SawStop

Post Extras:

**Amarillo Jerry**  
Member  
Reged: 06/13/03  
Posts: 1  
Loc: Northwest part of Texas called the panhandle.

**Re: SawStop - Straight from the horse's ....**  
[Re:SteveGass] **NEW**  
#596543 - 08/16/03 01:21 PM

Edit Reply Quote

Should the saw stop be activated and stop the saw, can it be used again or must it be replaced? If it must be replaced what would it cost me to replace it?

Jerry

-----

I am an old guy with a mesquite field in my back yard. Lots of tools collected over 50 Years. Some good some not. Present passion, turning.

Post Extras:

**SteveGass**  
Member  
Reged: 08/16/03  
Posts: 11

**Re: SawStop - Straight from the horse's ....**  
[Re:Amarillo Jerry] **NEW**  
#596552 - 08/16/03 01:37 PM

Edit Reply Quote

Jerry - if the system is ever activated, you have to replace what we call the brake cartridge and probably the blade - the saw is otherwise undamaged. The standard cartridge sells for \$59 and the dado cartridge is \$69. Changing the cartridge is about equivalent in difficulty to changing the blade and takes about the same amount of time. I suspect that a lot of folks may keep a spare cartridge handy just in case. For those that don't keep a spare, there's always FedEx.

Steve

Post Extras:

**bill-e**  
Member  
  
Reged: 11/24/01  
Posts: 999  
Loc: Rindge, NH

**Re: SawStop - Straight from the horse's ....**  
[Re:SteveGass] **NEW**  
#596554 - 08/16/03 01:45 PM

Edit Reply Quote

It is the tremendous economic cost of these injuries, not to mention the personal suffering, that I believe makes a requirement justified from a societal standpoint.

Since I'm not a socialist, I'd prefer to make that decision on my own, thank you.

-----

Bill Esposito  
[My WoodWorking Home Page and Pics](#)

Post Extras:

**catnhat**  
Member

**Re: SawStop - Straight from the horse's ....**  
[Re:SteveGass] **NEW**  
#596563 - 08/16/03 02:03 PM

Edit Reply Quote

Reged: 01/02/03  
Posts: 23  
Loc: charleston sc

Just another way someone thinks they know what's best for me. Why can't I have the choice and not have this system forced on me?

Post Extras:   

**daveferg**  
Member

**Re: SawStop - Straight from the horse's ....**

[Re:catnhat] **NEW**  
#596565 - 08/16/03 02:07 PM

 Edit  Reply  Quote

Reged: 02/19/02  
Posts: 5071  
Loc: Cloverdale, CA, USA

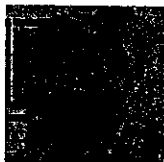
Do you "it's my choice" whinners want safe food? Maybe we should stop all USDA inspections---maybe we don't need any purity standards for baby food----????

The discussion isn't if there should be any standards---it is if a standard such as this is viable. A product should be as safe as it is reasonable.

-----  
Dave

Post Extras:   

**bill-e**  
Member



**Re: SawStop - Straight from the horse's ....**

[Re:SteveGass] **NEW**  
#596570 - 08/16/03 02:13 PM


 Edit  Reply  Quote

Reged: 11/24/01  
Posts: 999  
Loc: Rindge, NH

What is the "false triggering" rate and what kinds of tests did you use to determine it?

What operations cant we do with Sawstop which we can currently perform?

Lastly,  
\$200  
+\$59  
+\$69

-----  
\$328 - -dang, I cant add 

-----  
Bill Esposito  
My WoodWorking Home Page and Pics

*Edited by bill-e (08/16/03 02:15 PM)*

Post Extras:   

**Timberwolf**  
Member


Reged: 06/05/02  
Posts: 3405  
Loc: near Clearwater, central Florida

**Re: SawStop - Straight from the horse's ....**

[Re:daveferg] **NEW**  
#596576 - 08/16/03 02:21 PM

 Edit  Reply  Quote

....Do you "it's my choice" whinners want safe food?....

My vote is for safe food...but I also want Aspirin in my drinking water because I sometimes get a headache..I mean, I`ve already got Flouride and Chlorine...THEY know what is best for us....right?? 

-----  
God Bless our Troops

Saepe Expertus, Semper Fidelis, Fratres Aeterni

Post Extras:

**frigat0r**  
Member

**Re: SawStop - Straight from the horse's ....**

[Re:SteveGass] **NEW**

#596578 - 08/16/03 02:24 PM

Edit Reply Quote

Reged: 06/09/03  
Posts: 82

I am a lawyer and used to work in a firm that handled some workers comp cases. I saw about 6 people have their fingers cut off or mangled while working in the many cabinets shops in our area. Some of them were just kids, 19 yr old guys who got hired, never done any woodworking, and they set them up ripping face frame stock all day. And the kids would set the blade 1 1/2inch from the fence and rip the stock all day and of course some of them lost fingers. And the cost of the surgery, lost work and permanent disfigurement payments really added up. I bet you could really reduce your work comp premiums with the saw stop. I plan on ordering one of the saws on maybe the second or third run to make sure the bugs are worked out. I think requiring them on all saws would be a good thing. I mean we have so many safety requirement already on machines. It would seem a lot better than having those awkward guards that most saws come with now.

Post Extras:

**wood6162**  
Member

**Re: SawStop - Straight from the horse's ....**

[Re:SteveGass] **NEW**

#596579 - 08/16/03 02:30 PM

Edit Reply Quote

Reged: 07/26/03  
Posts: 11

If you often look at this forum you will see that we are all concerned with saftey. A close second would be accuracy. Does the saw stop effect accuracy at all? It seems (from the video I saw) that if you stop and re-tract the blade as fast as necessary to prevent injury I would think that there would be an accuracy trade off.

Post Extras:

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Saw  
43a

**Stevenson, Todd A.**

---

**From:** Pat [patricks@ywave.com]  
**Sent:** Monday, August 18, 2003 3:25 PM  
**To:** Stevenson, Todd A.  
**Subject:** Petition CP 03-2, Petition for Performance Standards for Table Saws

Petition CP 03-2, Petition for Performance Standards for Table Saws

So, does it work and can people afford to buy it?

You can either theorize if it works or use it in the workplace and let people make mistakes with it. The theory of how fast a hand moves towards a blade in a kickback or other mistake is going to be an educated guess. I can't see making a law that all saws must have this device based on a guess. So how many saws with this device in daily use will it take to determine if it works? Steve, I am not clear if you have one that you use both as demo and in the workplace or you have two, one for demo and one in the workplace. That is not enough. I guess the number of saws in use depends on the number of mistakes made on them.

The argument that it is worth what ever it costs is not effective if a large number of people can not afford to buy a saw with this device on it. If all woodworkers could afford Unisaws or Powermatic 66's they would probably buy them. A lot of people can't afford them. For this device to be accessible to the public it has to be affordable. There needs to be a detailed, factual, supported study of just how much this device costs. The only people who could have this information is the saw makers themselves. A statement of cost from any one else is going to be a wild guess. I can't see making this device required on all saws based on a wild guess. Why didn't the saw makers put it on their machines in the first place? Could be this device is astronomically expensive to incorporate into their saw lines. Let's take a wild guess, but this time on the expensive side. Let's say it takes \$800 to build onto every saw. That is \$800 added to the price of every new saw. How many people can't afford that?

Patrick Sariago  
15609 Scenic Shores Dr.  
Yelm, Wa. 98597  
360-894-0505

*Stew*  
44

**Stevenson, Todd A.**

---

**From:** Mike Harrison [mrharisn@swbell.net]  
**Sent:** Sunday, August 17, 2003 2:36 AM  
**To:** Stevenson, Todd A.  
**Subject:** Petition CP 03-2, Petition for Performance Standards for Table Saws

The above mentioned petition filed by Gass, Fanning, and Fulmer, et al is an attempt to have the commission establish national guidelines based upon patents held by the petitioners. To do so would in effect be mandating the use of their patented technology. The petitioners state they have approached all of the manufacturers of table saws with licensing proposals and have been rejected. Without a response from those manufacturers one can only speculate on the basis for such rejection.

Although there is potential for significant savings in human terms, there is also tremendous financial gain to be made by the petitioners. The product has only been demonstrated by a "single prototype" for a period of 6 months, according to Gass as recently as today (August 16). The technology, though seeming somewhat promising, has yet to undergo any formal comprehensive testing program as might be required by responsible underwriting institutions.

In light of the potential for tremendous financial gain on the part of Gass, Fanning, and Fulmer, et al and in the absense of proper testing and evaluation by nationally recognized, independent testing agencies **I strongly urge the commission reject the petition.**

Mike Harrison  
12926 Briar Road  
Liberty, MO 64068

Stevenson, Todd A.

Law 45

**From:** Howard Pringnitz [hpringnitz@austin.rr.com]  
**Sent:** Sunday, August 17, 2003 11:24 PM  
**To:** Stevenson, Todd A.  
**Subject:** Petition CP 03-2, Petition for Performance

To Whom It May Concern,

The above-mentioned petition filed by Gass, Fanning, and Fulmer, et al is an attempt to have the commission establish national guidelines based upon patents held by the petitioners. To do so would in effect be mandating the use of their patented technology. The petitioners state they have approached all of the manufacturers of table saws with licensing proposals and have been rejected. Without a response from those manufacturers one can only speculate on the basis for such rejection.

Although there is potential for significant savings in human terms, there is also tremendous financial gain to be made by the petitioners. The product has only been demonstrated by a "single prototype" for a period of 6 months, according to Gass as recently as yesterday (August 16). The technology, though seeming somewhat promising, has yet to undergo any formal comprehensive testing program as might be required by responsible underwriting institutions.

In light of the potential for tremendous financial gain on the part of Gass, Fanning, and Fulmer, et al and in the absence of proper testing and evaluation by nationally recognized, independent testing agencies I strongly urge the commission reject the petition.

Howard L. Pringnitz  
4001 A Stonebridge  
Round Rock, TX 78681

A happy person is not a person in a certain set of circumstances, but rather a person with a certain set of attitudes.



Stevenson, Todd A.

Saw  
HG

**From:** bdanner@indy.rr.com  
**Sent:** Monday, August 18, 2003 1:13 AM  
**To:** Stevenson, Todd A.  
**Subject:** Petition CP 03-2, Petition for Performance Standards for Table Saws

Sir or Madam,

I strongly recommend the rejection of the above referenced petition. Quite simply, Petition CP 03-2, as filed by Gass, Fanning, and Fulmer, et al, is an attempt to have the commission establish national safety guidelines based upon patents held by the petitioners. To do so would, in effect, mandate the use of their patented technology. Recognizing that there is potential for savings in human terms, we must also recognize that there is also tremendous financial gain to be made by the petitioners should their device be manated for use on Table saws. I believe that the potential for huge profits, generated by a mandated and patented device is the the primary motivation behind their petition. The petitioners state they have approached all of the manufacturers of table saws with licensing proposals and have been rejected. Without a response from those manufacturers one can only speculate on the basis for such rejection. In addition, the product has only been demonstrated by a "single prototype" for a period of 6 months, according to Gass as recently as today (August 16). The technology, though seeming somewhat promising, has yet to undergo any formal comprehensive testing program as might be required by responsible underwriting institutions. •

In light of the potential for tremendous financial gain on the part of Gass, Fanning, and Fulmer, et al and in the absense of proper testing and evaluation by nationally recognized, independent testing agencies I strongly urge the commission reject the petition.

Bryan Danner  
5639 Primrose Ave.  
Indpls, IN 46220

*Saw  
com*  
47

**Stevenson, Todd A.**

---

**From:** Mike Barrett [bar22@mindspring.com]  
**Sent:** Tuesday, August 19, 2003 5:21 AM  
**To:** Stevenson, Todd A.  
**Subject:** Petition CP 03-2, Petition for Performance Standards for Table Saws

Although SawStop does not interfere with cutting procedures, until it is adequately tested by recognized independent US testing agencies, the SawStop device has no established track record under normal and varied use in the real world.

I use every safety device available on my tablesaw because I respect the inherent dangers of this tool. As the petitioner of this device has had only one prototype device in use for approximately six months, I would hope CPSC agrees that testing of this device has been insufficient for one to make an intelligent decision on its abilities.

The safety devices we need from tablesaw manufactures are improved standard blade guards and splitters available with the saw "out of the box" as opposed to the awkward devices currently provided as standard equipment. Aftermarket devices sell quite well and are provided by many of these same manufactures thus increasing their profit. We simply need a device that is simply to remove and install such as the various snap in and disappearing splitters currently available.

Mike Barrett  
5919 Oetjen Blvd  
Norfolk, VA 23502-5338

Hammond, Rocky

*SawStop part 4/8*

**From:** Information Center  
**Sent:** Tuesday, August 19, 2003 10:05 AM  
**To:** 'mcreynolds199@msn.com'  
**Subject:** Opinion about SawStop

Hello,

Thank you for your comments. We have forwarded your comments to the appropriate agency personnel. If additional information is needed, someone from the agency will contact you directly.

Please be advised that you may obtain CPSC publications, recalls and general safety-related information via our web site at [www.cpsc.gov](http://www.cpsc.gov). Click on the "Search" icon and type in your topic. You may also file an incident report via the web site mentioned above. If you have additional inquiries, you may call our toll-free hotline at 1-800-638-2772. Press 1 to begin and then press 300 to speak with a representative. A representative is available to assist you Monday - Friday, 8:30am to 5:00pm, Eastern Standard Time.

tm

-----Original Message-----

**From:** KENDALL MCREYNOLDS [mailto:mcreynolds199@msn.com]  
**Sent:** Tuesday, August 19, 2003 8:48 AM  
**To:** Information Center  
**Subject:** Opinion about SawStop

Sirs,

I would like to add my misgivings about the SawStop invention.

I was very much in favor of this product when I first heard of it. But, since then, I have studied the particulars released for public consumption. It seems to me the information about the invention is being deliberately misleading. I do not believe this invention will prevent catastrophic hand injuries. The testing so far has been done at a very slow speed, much slower than the average feed speed of a person using a table saw. Testing has only been done with one unit and under very controlled conditions, at least as I am able to understand from the available information.

I think there needs to be much more extensive testing.

Thank you.

Kendall McReynolds  
[mcreynolds199@msn.com](mailto:mcreynolds199@msn.com)



SawStop, LLC  
22409 S.W. Newland Road  
Wilsonville, Oregon 97070  
Phone (503) 638-6201  
Fax (503) 638-8601  
www.SawStop.com

Saw  
Common

August 20, 2003

Via U.S. Mail

John P. Machacek, CEO  
Northfield Foundry & Machine Co.  
320 North Water Street  
Northfield, Minnesota 55057

Dear Mr. Machacek,

Thank you for your letter of August 12, 2003 identifying several concerns you have with the SawStop technology. We appreciate receiving your letter and having the opportunity to respond and clarify what appear to be several misunderstandings concerning the technology.

Your first concern is that our demonstrations of the technology are not realistic. You apparently saw one of our first demonstrations at the IWF trade show in Atlanta, Georgia in August of 2000. In that demonstration a piece of wood was fed into a table saw with a hot dog placed in the path of the blade as if it were a misplaced finger. Apparently, in the demonstration you witnessed the wood was fed slowly into the saw, and you say that demonstration is unrealistic because wood is more often fed into saws at speeds of 10 to 20 feet-per-minute.

When we first demonstrated the saw we fed wood into the saw at a slow speed thinking it would make the demonstration longer and more interesting because people could watch the saw as it cut the wood and approached the hot dog. However, we now demonstrate the technology by pushing the wood into the blade as fast as possible. We typically push 3/4-inch-thick plywood into the blade at a speed of at least one foot-per-second (60 feet-per-minute), which is three to six times faster than what you describe as typical production feed speeds. At that feed rate, the typical nick in the hot dog is about 1/32 to 1/16<sup>th</sup> of an inch deep. We would be happy to send you a copy of a report that the television show Next@CNN broadcast showing a "fast" demonstration of our technology, if you would like.

You are correct that the faster your hand is moving when it contacts the spinning blade, the deeper the resulting cut will be. However, our technology stops the blade in about 1/200<sup>th</sup> of a second after contact, so even if you contact the blade at the fast speed of 1 foot-per-second you would still receive only a minor nick. It is also important to point out that regardless of the speed at which you contact the blade, the resulting injury from a saw equipped with the SawStop technology would be far less severe than it would be without the SawStop technology.

Your second concern is that the technology requires the arbor shaft to be electrically isolated from the rest of the saw, and you do not believe it is possible to do that on direct drive saws. A point of clarification about the technology may resolve this concern. It is necessary to isolate the blade for our detection system to work on a table saw, but it is not necessary to isolate the arbor shaft. One way to isolate the blade is to isolate the arbor shaft, and that is how we have done it on our table saws, but that is not necessary. There are other ways to isolate the blade that may be more practical for direct drive saws. By way of example, you may be familiar with the pneumatic up-cut saw sold by Safety Chop that incorporated a SawStop-like system. Although that system utilized a belt drive, the blade was isolated from the arbor by phenolic bushings, the arbor itself was not electrically isolated. A similar system could easily be implemented on direct drive saws.

You next ask whether we have considered that many different types of cutting tools are used, such as different sized blades, dado sets, molding heads, etc. Yes, we have considered this issue. The approach we have taken with our table saws is to provide different brake cartridges designed for specific cutters. If a user wanted to change from a standard 10-inch blade to an 8-inch dado set, for example, the user would simply change from a brake cartridge designed for the 10-inch blade to a brake cartridge designed for the 8-inch dado. Changing the brake cartridge takes no more time than changing the blade and it is a relatively simple matter to provide brake cartridges sized to accommodate different blades. Thus, the braking system we have developed will work with the vast majority of cutters. Given the range of different cutters that potentially could be used on a table saw, however, it may be that there are some that would not be suitable for use with the braking system we have implemented on our table saws. Nevertheless, the minor inconvenience of not being able to use some uncommon cutter is far outweighed by the dramatic reduction in the risk of serious injury offered by the SawStop technology. Moreover, it is possible to implement the technology in such a way that the user could choose to disable the system when using an incompatible type of cutter head. Similarly, we have incorporated a simple key-actuated bypass to allow the system to be temporarily disabled to cut conductive materials such as aluminum or carbon fiber laminates.

You also seem concerned that it is necessary for the blade to retract. We would like to clarify that the primary protection offered by our braking system on table saws is simply stopping the blade in a few milliseconds. Retracting the blade offers some potential benefits, but it is not the primary protection on our saws. In our typical demonstration where we feed wood into the saw at a speed of 1 foot-per-second, there would be no discernable difference in the resulting injury if we did not retract the blade. Thus, the SawStop technology may be implemented on some saws, such as radial arm saws, without any blade retraction.

On the other hand, it is not always necessary for the blade to stop to mitigate injury. The Safety Chop up-cut saw mentioned above simply retracts the blade beneath the table without stopping the blade. That system, while not as fast a reaction as stopping the blade on our table saws, is still far better than amputating the operator's finger or hand and is certainly adequate for use on an up-cut saw. We believe that retraction will prove to be a more practical solution than stopping blade with diameters of approximately 16-inches or more.

You also mention the possibility of broken blades and flying metal parts. In all of the tests we have done, or which other have done and reported to us, we have never seen or heard of any blades breaking or flying metal parts. It is certainly necessary to design any machine on which SawStop-like technology is to be applied with sufficient strength to withstand the expected loads – no different from the design process that happens now.

Band saws are another example of how the SawStop technology can be adapted for various types of saws. A challenge in stopping a band saw blade quickly is absorbing the angular momentum of the wheels, especially in the case of larger machines. However, we have shown with our prototype that it is not necessary to stop the wheels to stop the blade. In particular, we have a pair of jaws positioned just below the table that are triggered by a high speed actuator to close and sever the blade when contact between the blade and an operator is detected. The jaws hold the end of the blade that is coming down through the table, while allowing the lower end to retract into the guard. The wheels continue to spin for a short time as they gradually dissipate their angular momentum. By stopping the blade in this fashion, it is no more difficult to protect the operator of a 36 inch industrial band saw than it is to do so on a 14 inch consumer band saw, although you would likely need a wider set of jaws on saws that accept wider blades.

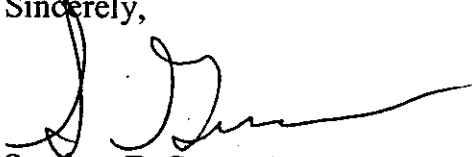
Again, we appreciate you sending us the letter and providing us the opportunity to address your concerns. We recognize that manufacturers will face challenges to incorporate the SawStop technology or something like it on their machines and that it will take some investment to do so. Nevertheless, it is incumbent upon

Mr. John P. Machecek  
Northfield Foundry & Machine Company Inc  
August 20, 2003  
Page 4 of 4

manufacturers of woodworking machinery to improve the safety of their products if there is a reasonable way to do so, and we believe the SawStop technology conclusively demonstrates that it is now feasible and economically reasonable to do so.

Please do not hesitate to contact me if I can answer any additional questions you might have or address any other concerns.

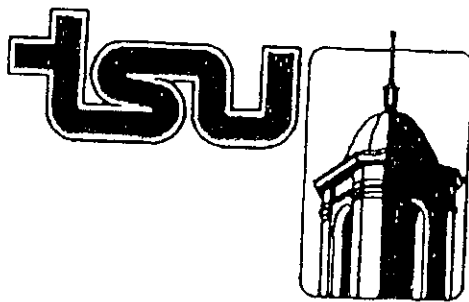
Sincerely,

A handwritten signature in black ink, appearing to read 'S. Gass', with a long horizontal flourish extending to the right.

Stephen F. Gass, Ph.D., President

cc: United States Consumer Product Safety Commission

*Saw Count* 50



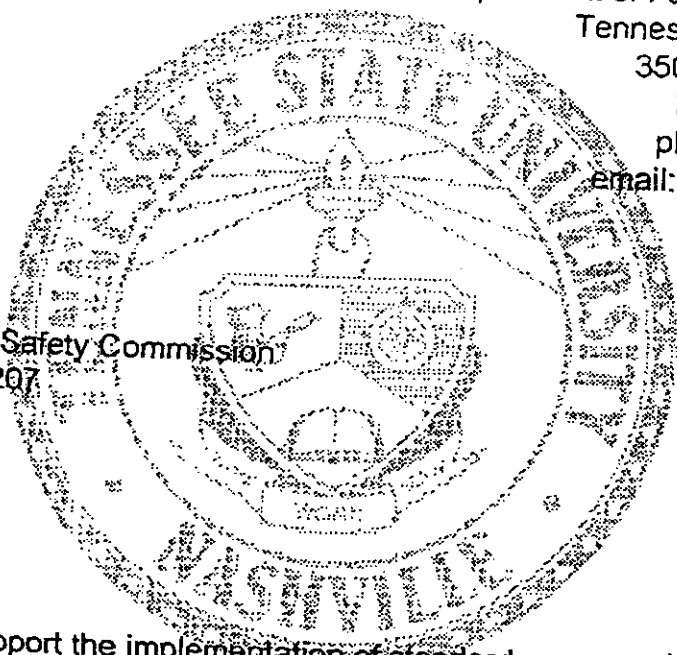
**Vice President Business and Finance**  
Tennessee State University  
3500 John A. Merritt Blvd.  
Nashville, TN 37209-1561

Facilities Management

Petition CP 03-2, Petition for Performance Standards for Table Saws

August 27, 2003

Tommi K. Smith  
Coordinator of Campus Environmental Services  
Department of Facilities Management  
Tennessee State University  
3500 John Merritt Blvd.  
Nashville, TN 37209  
phone: 615-963-5683  
email: tsmith@tnstate.edu



Office of Secretary  
Consumer Products Safety Commission  
Washington, DC 20207

Via facsimile

Dear Sir or Ma'am:

Please note that I support the implementation of standards proposed by Messrs. Gass, Fanning, and Fulmer, et al., as listed in petition CP 03-2, Petition for Performance Standards for Table Saws.

As a professional with responsibility for environmental, health and safety issues, I prefer devices that least interfere with an employees ability to get the job done. All too often I see safety devices bypassed or removed because they interfere with the employees ability to get the job done easily and efficiently. I have personal experience with some safety devices that only exchange hazard for another. Many work environments are not conducive to enforcing safety regulations so guards are removed and never replaced or are only replaced temporarily for an inspection.

A device conforming with the proposed standards would allow employees to work unhindered while providing them protection from all but the most minor of injuries. It is

AN EQUAL OPPORTUNITY/AFFIRMATIVE ACTION EMPLOYER MF

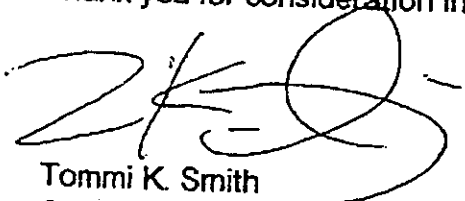


not likely that a device conforming to the proposed standards would be disabled or removed by employees. The employees I have talked with at the university would welcome a saw that conforms to the proposed standards.

A saw that conforms with the proposed standards is already being marketed. This cost for the saw is in line with current market prices so there would not be an undue economic burden imposed on anyone to implement the proposed standards.

If you have any questions please feel free to contact me.

Thank you for consideration in this matter.



Tommi K. Smith  
Coordinator of Campus Environmental Services

*Saw  
Warrant 51*

Stevenson, Todd A.

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**From:** TWHDesign@aol.com  
**Sent:** Monday, September 01, 2003 7:39 PM  
**To:** Stevenson, Todd A.  
**Subject:** Petition CP 03-2, Petition for Performance Standards for Table Saws

On August 12, 2002, after working all day building my own house; I went to use my table saw to do some more cutting. As I was cutting my hand slipped causing the index finger tip on my right hand to be cut off. I spent the next four hours in the Emergency Room of the hospital getting it pieced together at a cost of around \$850.00 not to mention my wife freaking out at the site of my bloody hand. I also watched this happen to my flight instructor as he was using his table saw . It has taken me several months to regain partial use of my finger and the feeling in it.

The cost of this Saw Stop blade system, that would prevent this, is so MINISCULE compared to the loss of fingers/hands and the cost of medical work to try to repair the damage that I don't see how this cannot be made mandatory on ALL saws, especailly table saws! As a result of this, my wife insisted that I buy one of the Saw Stop table saws. Whether you make this system mandatory or not I know I will be safe from this happening again. To me this is a very inexpensive no brainer!

Please see to it that system is made mandatory on all table saws. Thanks.

Tom Hewitt

Saw

52

**Stevenson, Todd A.**

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**From:** John [bustedbonz@comcast.net]  
**Sent:** Monday, September 08, 2003 1:50 AM  
**To:** Stevenson, Todd A.  
**Subject:** Petition CP 03-2, Performance standards for table saws

To Whom it may concern:

As a board-certified orthopaedic surgeon and hand surgery specialist, I have a unique perspective on table saw safety. Being in a practice that exclusively treats problems related to the hand and upper extremity, I have seen countless numbers of severe, saw-related injuries to the hand and fingers. I also happen to be an avid woodworker, with my own dedicated woodshop that includes the exact type of saw addressed by this petition.

In my experience, the majority of injuries that I have seen have been with professional woodworkers (cabinet makers, etc.) or very experienced hobbyists. Almost without exception, these individuals remove the standard blade guards that come stock on most table saws. Many cutting operations (specifically non-through cutting operations such as cutting a slot or groove) cannot be made with the guard in place. To maximize productivity, the guard is simply left off once removed. Some woodworkers also complain that the guard obscures the view of the actual cutting. Without the guard in place, the blade is exposed and the hands and fingers are made vulnerable to injury. The high speed of a table saw blade allows for severe injuries to occur well before human reaction time can pull the hand or finger away.

The financial and emotional consequences of hand injuries can be absolutely devastating. Beyond just the loss of employment during the initial recuperation period, many of the deep cuts and amputations cause severe permanent impairment. A skilled craftsman may even be reduced to the point of virtual unemployment.

The new blade stopping system that has generated the interest in this petition is a major advance in shop safety. The system is completely unobtrusive, which is the primary advantage over the traditional blade guard. No woodworker would have any reason to remove or disable it. The only real issue is cost. Based on the severity of injuries that I have seen, I believe that the added cost would be a small price to pay compared to the lost productivity and medical costs. I would gladly pay to have such a system in my own personal shop, as a serious injury to my hands would cost me my career.

If you would like any additional information from me, I would be happy to respond and provide additional insight into this subject. I have no financial interests in the Sawstop company.

Dr. John Miyano, M.D.  
Diplomate of the American Board of Orthopaedic Surgery  
Member of the American Society for Surgery of the Hand

*Saw  
pet*

53

**Stevenson, Todd A.**

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**From:** Charlene Butler [argonauta@foxinternet.net]  
**Sent:** Tuesday, September 09, 2003 1:31 AM  
**To:** Stevenson, Todd A.  
**Subject:** FW: Petition CP 03-2, Petition for Performance Standards for Table Saws

-----Original Message-----

**From:** Charlene Butler [mailto:argonauta@foxinternet.net]  
**Sent:** Monday, September 08, 2003 10:29 PM  
**To:** 'cpsc-os@cpsc.gov'  
**Subject:** Petition CP 03-2, Petition for Performance Standards for Table Saws

I first learned about the performance standards that are the basis of the Saw Stop technology soon after suffering a serious injury to my left (dominant) hand in a typical table saw "kick-back" accident September 15, 2002. Had I been using a saw equipped with a safety feature comparable to the Saw Stop device, I would have undoubtedly experienced an injury requiring, at best, a bandaid. Although my injuries were relatively minor for this type of accident—three digits were involved with one partially amputated—rather than loss of my entire hand—I have now undergone two surgeries plus more than 10 months of very intense therapy and a lot of pain and agony. My rehab progress has been good and after 10 months have regained enough function in this hand to be able to resume work in fitting and improving sailing yachts. As a 63-year-old professional, I consider it significant that I have been operating power wood working machinery without a previous injury since I was a teenaged apprentice in my father's cabinet shop.

After reading this petition, I find that the degree to which its claims are conservatively understated and its proposal non-serving to be frankly incredible! As an example, the petitions projects direct medical costs for the typical table saw accident at \$5,000-\$10,000. My initial surgery alone was \$12,000. Direct medical costs of 2 surgeries plus months of therapy bring my accident cost to \$30,000. Adding lost income brings the accident cost to \$75,000.

Just how much would any thinking person believe I would now pay to have been working on a table saw equipped with the performance standards defined by this petition? Please support this petition to stop such horrible accidents.

Michael Davis  
1818 Westlake Ave. N. Suite 106  
Seattle WA 98109

9/9/03

Sept. 4, 2003

Dear Consumer Product Safety Commission:

Re: CPSC Petition No. CP03-02 Requesting Performance Standards for Table Saws.

I wished to express my support for the above mentioned petition. I am a home user of a table saw. I have been using table saws for approximately 20 years at home. I use the table saw for making furniture, benchwork for my model railroad, home repair and improvement projects. I have found over the years that there are numerous occasions in which the existing saw protection methods can not be used for the application that I am working on. I have looked at several different protection methods for the saw. I have found that none of them can be easily or in some cases can be used at all when making some types of cuts with the table saw. I have found it necessary to remove the protection when using the saw under these circumstances. I have examined the protection method described in the petition. This is the only protective method that I have seen which can be used in all of the types of cuts that I make with my table saw. I strongly encourage the commission to adopt the petition in the interest of safety for all table saw users. Thank you for your time.

Carl Love

Carl Love, Ph.D.  
11170 Fairfield St  
Beaverton, OR 97005  
503-671-9461  
carllove999@hotmail.com

Stevenson, Todd A.

55

From: Gerald E. Heilman, Jr. [gheilman@consbio.org]  
Sent: Monday, September 29, 2003 3:53 PM  
To: Stevenson, Todd A.  
Subject: Petition CP 03-2, Petition for Performance Standards for Table Saws

To Whom It May Concern,

I would like to state my full support of Petition CP 03-2, Petition for Performance Standards for Table Saws.

I am a wood worker that has safely used many hand and power tools for the past three decades. Unfortunately, I was recently involved in a table saw accident that badly cut the back of my left hand. Fortunately, I should regain full use of my hand in the next six months to one year. I realize that this does not make me an unbiased commentator, but I have reviewed the petition information provided by the Saw Stop company to the CPSC, comments provided by table saw manufactureres, and reviews by various trade magazines. The comments from the manufacturing sector are mainly directed at potential loss of sales, which I think are baseless. I would gladly pay an extra 25 to 50 percent on the cost of a table saw to have Saw Stop type technology included. To not include or slow down the use of Saw Stop type technology would be corporate self-interest and bottom line thinking at its worst. At the very least, an option to include Saw Stop type technology should be required for all power tools that can possibly use the technology so that a person could make their own choice.

Thank you for your time and consideration. I look forward to reading about the CPSC's ruling on Petition CP 03-2, Petition for Performance Standards for Table Saws.

Sincerely,

Gerald E. Heilman, Jr  
1850 NE Noble Avenue  
Corvallis, OR 97330  
(541) 752-1823



**Underwriters  
Laboratories Inc.®**

56  
**James R. Beyreis, P.E.  
Vice President-Engineering**

333 Pfingsten Road  
Northbrook, IL 60062-2096 USA  
www.ul.com  
tel: 1 847 272 8800, x42301  
fax: 1 847 313 2301  
James.Beyreis@us.ul.com

September 22, 2003

Consumer Product Safety Commission  
Office of the Secretary, Room 502  
Washington, DC 20207

SUBJECT: Petition CP 03-2, Petition for Performance Standards for Table Saws

This is to submit comments of Underwriters Laboratories Inc. (UL) on petition CP 03-2, Petition for performance standards for Table Saws. The subject petition requests that the Consumer Product Safety Commission issue a rule prescribing performance standards for a system to reduce or prevent injuries from contact with the blade of a table saw. The petition also provides specific details regarding a detection/reaction system that is proposed by the petitioner to be required by the applicable standard covering table saws. The attached Appendix provides comments to the subject petition.

These comments are provided by Underwriters Laboratories Inc. as information, which the Commission may wish to consider in addressing the petition.

Underwriters Laboratories Inc. is a not-for-profit organization dedicated to public safety. UL publishes UL Standards for Safety, many of which are recognized as American National Standards, developed through an ANSI accredited standards development process. UL publishes ANSI/UL 987, Stationary and Fixed Electric Tools. The requirements of ANSI/UL 987 address table saws. Proposals for revisions to UL Standards for Safety may be submitted to UL by anyone.

We appreciate the opportunity to provide comments concerning the subject petition.

Regards,

Jim Beyreis  
Vice President – Engineering

Underwriters Laboratories Inc.  
333 Pfingsten Rd.  
Northbrook, IL 60062-2096  
Phone: 847-664-2301  
Fax: 847-313-2301  
Email: [James.Beyreis@us.ul.com](mailto:James.Beyreis@us.ul.com)

An independent organization working for a safer world with integrity, precision and knowledge.



## APPENDIX

### Comments on Petition CP 03-2, Petition for Performance Standards for Table Saws

#### General:

1. The American National (ANSI) Standard which addresses the safety of table saws is ANSI/UL 987, the UL Standard for Safety for Stationary and Fixed Electric Tools. This standard is maintained by the Standards Technical Panel (STP) of Underwriters Laboratories Inc (UL) for electric tools. The STP is a balanced, consensus body of members classified into three groups: General Interest, Producers, and Users. Proposals for revisions to the requirements of UL987 are being developed by the STP, which are intended to address table saw injuries. The detection/reaction system device outlined in the petition was presented and discussed at the February 2003 meeting of the STP. The consensus of the STP was that additional information would be required by the STP to permit development of requirements relative to the device.
2. Table saws employing the device addressed by the petition, have not been submitted to UL for investigation. UL is prepared to undertake an investigation and evaluation of the device or a product employing the device. The owner of the device has been advised that UL is prepared to undertake such an investigation of the device.

#### Safety/Reliability of the Device:

The following items are a list of minimum concerns related to safety, reliability, or effectiveness of the device, that may need to be addressed:

3. The device is "one shot." Once triggered, it cannot be reset and the consumer must purchase a replacement cartridge device. This could invite consumers to circumvent the device rather than stop a work project midstream. Similarly, the expense of replacing the cartridge could also be a factor as to whether or not the device is replaced (as opposed to bypassed).
4. The device's safety feature is based on capacitive coupling, so it only works when cutting dielectrics (insulators) like woods or plastics. It will not work when cutting metals, metal clad materials or any other conductive materials. The product contains a bypass switch to address this, which introduces the potential for overriding or defeating the safety features being claimed, due to user error (e.g. turned off for metal cutting and not turned back on), design flaws (inadequate guarding of the turn-off actuator), insufficient reliability of the switching circuit (endurance, solid state components if applicable), nuisance tripping (due to false signals resulting from component faults, high humidity and the like), and the like.



5. Although accidental blade contact by the user of a table saw is likely to be infrequent, activation of the device is essential to its safety function when such a contact may eventually occur. The reliability of the device given this circumstance needs to be considered. The reliability should be proven out and criteria established to control future production of all critical electronic components.
6. The ease in which the device is replaced (once triggered) as it relates to the potential for bypassing it instead needs to be evaluated.
7. The conditions that would create nuisance tripping needs to be understood and addressed. The device will need to be tested with various materials to ensure that contaminants will not affect the operation of the device. Cutting materials which are electrically conductive will trip the device. The potential for elevated moisture content of wood may cause wood to become conductive to the extent that the device may trip.
8. The device may introduce hazards that are not present on table saws without the device. The effect of the stopping force of the saw blade may affect other parts of the saw, such as the surrounding blade enclosure. The potential for structural damage to the saw may occur due to single or multiple trips of the device. A study of forces exerted on arbors and mounting means should be considered. The effects of vibration and heating should be considered.
9. The device could be misapplied since blade installation is required to be made by the user in conjunction with the device.
10. The compatibility of the device with accessories that are used on table saws that employ this device need to be evaluated, as well as with blades of various diameters and configurations.
11. It is not uncommon for workers to wear gloves. This may affect the operation of the device.
12. It is not known whether the stop time established by the manufacturer of the device is appropriate, or whether a tolerance in operating should be permitted
13. The circuit supplying the sensing current needs to be evaluated for electric shock hazards, and to ensure that isolation has been achieved.
14. The Petition does not propose a performance based requirement. Instead, it proposes that CPSC, in its capacity as a government agency, promulgate a rule that would require that all table saws manufactured for use in the United States incorporate a patented device, thereby granting the patent holder a governmentally mandated monopoly position.

Stevenson, Todd A.

*Saw* 57  
~~58~~

**From:** Michael White [mdwhite@consbio.org]  
**Sent:** Friday, October 03, 2003 10:43 AM  
**To:** Stevenson, Todd A.  
**Subject:** Petition CP 03-2, Petition for



Card for Michael White

I support this petition.

Michael D. White

Stevenson, Todd A.

*Saw* 58

**From:** Marisa Wampler [mwampler@consbio.org]  
**Sent:** Monday, October 06, 2003 7:33 PM  
**To:** Stevenson, Todd A.  
**Subject:** Petition CP 03-2 Petition for Performance Standards for Table Saws

I have a friend who had an accident involving a table saw. He is so lucky he didn't cut off three fingers. As it was, he lost more than a week of work time and is having physical therapy to regain functionality of three fingers. I support this petition to add this safety feature to such saws.

--  
Marisa Wampler  
Assistant Director  
(541) 752-3658  
www.consbio.org

1380 SUMNER AVE  
EVELEND, OHIO 41731-1515

# COMPRESSED AIR AND GAS INSTITUTE CAGI

216/241-7333 FAX 216/241-0105  
E-Mail: [cagi@cagi.org](mailto:cagi@cagi.org)  
[www.cagi.org](http://www.cagi.org)



SawStop. 59

October 24, 2003

Office of the Secretary  
Consumer Product Safety Commission  
Washington, D.C. 20207

Re: Petition CP 03-2, Petition for Performance Standards for Table Saws

Dear Sir or Madam:

The Compressed Air and Gas Institute ("CAGI") is a trade association that since 1915 has been the leading organization representing manufacturers of compressed air system equipment, including air compressors, blowers, pneumatic tools and air drying and filtration equipment. For more than 80 years, CAGI has been working to improve production, proper use and increased distribution of equipment used in compressed air and gas systems.

As such, CAGI and its members actively participate in the development and improvement of numerous industrial standards relating to many aspects of, and components for, compressed air systems and equipment. CAGI members believe that voluntary, industry-wide standards are often an optimum means of obtaining product improvements, including safety benefits.

It has recently come to our attention that the Commission has received a Petition filed by, among others, Stephen F. Gass, relating to Mr. Gass's invention, called "SawStop." The Petition seeks to have the Commission mandate incorporation of Mr. Gass's invention as part of all table top saws. Our understanding is that the Power Tool Institute will be submitting a full response to the Petition, including a detailed technical analysis.

But the Petition has implications that go beyond power saw products, and those implications are of concern to CAGI and its members. The Petition seeks, in a single decision of the Commission, to sweep aside the voluntary industry standards for table saw safety – including UL Standard 987 for Stationary and Fixed Electric Tools – standards that have garnered virtually complete voluntary acceptance among manufacturers in the power saw industry. To the extent that applicable standards should be subject to reviews and regular updating (as in the case with all voluntary industrial standards), we understand that Underwriters Laboratories and the power saw industry are working together to enhance the safety of the products.

CAGI submits that it would be wrong simply to bypass the voluntary standard writing process of the power saw industry by imposing a mandatory Commission standard as requested by the Petition.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "R. Johnson". The signature is fluid and cursive, with a large initial "R" and a long, sweeping underline.

R. Christopher Johnson  
Secretary-Treasurer of CAGI

RCJ/ljs  
cagi

**Stevenson, Todd A.**

*Saw Pet.*

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**From:** Chris Johnson [cjohnson@taol.com]  
**Sent:** Friday, October 24, 2003 3:05 PM  
**To:** Stevenson, Todd A.  
**Cc:** David Versfelt; TMULLIN@MilesStockbridge.com; Leslie  
**Subject:** Petition CP 03-2, Petition for Performance Standards for Table Saws

Compressed Air & Gas Institute comments on Petition CP 03-2, Petition for Performance Standards for Table Saws, are attached.

Regards,  
R. Christopher Johnson  
CAGI

10/24/03

**Stevenson, Todd A.**

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*Start pet  
comm 00*

**From:** E760@aol.com  
**Sent:** Sunday, October 26, 2003 7:09 PM  
**To:** Stevenson, Todd A.  
**Subject:** Petition CP 03-2, Petition for Performance Standards for Table Saws

I urge you to reject the petition identified in the subject line of this message (Petition CP 03-2; Petition for Performance Standards for Table Saws). There is already a saw equipped with such a safety device on the market. For those that need such a safety device, that should be sufficient. Requiring all manufacturers to offer the device would be an unwarranted excursion into the marketplace.

Ed Johnson  
King George, VA

## NAM CPSC Coalition

November 5, 2003

Office of the Secretary  
U.S. Consumer Product Safety Commission  
4330 East-West Highway  
Bethesda, MD 20814

Re: Petition CP-03-2 Petition for Performance Standards for Table Saws  
Comments of CPSC Coalition

Members of the Commission:

In June 2003, Stephen F. Gass and several other individuals petitioned the Consumer Product Safety Commission ("CPSC") to initiate a rulemaking for table saws. (Petition CP-03-2, Petition for Performance Standards for Table Saws.) Specifically, the petitioners request that the CPSC require manufacturers of certain table saws to equip their products with specially designed safeguards. The National Association of Manufacturers ("NAM") CPSC Coalition has reviewed this petition and, for the reasons described below, urges the Commission to deny it.

The NAM CPSC Coalition has for two decades represented approximately 65 consumer product manufacturers, retailers, and their representatives, serving as a forum to address common issues and concerns about the operation of the Commission and about manufacturers' requirements under the Consumer Product Safety Act and related acts. While the NAM CPSC Coalition does not typically involve itself in industry- or company-specific issues, it will do so if the issue threatens to negatively affect consumer-product manufacturers in general. We believe Petition CP-03-2 meets this criterion.

Specifically, while the petition seeks to impose requirements only on manufacturers of table saws, it raises at least two issues of significant importance to other consumer-product manufacturers:

- (1) The petition, if granted, would clearly impose a design requirement mandating the use of technology patented by the three primary petitioners. Section 7 of the Consumer Product Safety Act, 15 U.S.C. § 2056, prohibits the imposition of such a design requirement. The Coalition is concerned that granting this petition would turn the standard-making process into a forum for inventors seeking Commission mandates for their inventions.



(2) The products proposed to be regulated are already the subject of voluntary standards promulgated by Underwriters Laboratories. The voluntary standards process is a bedrock of American product safety and should not be lightly circumvented. In this case there is complete compliance in the industry with the applicable voluntary standards, which are the subject of regular and comprehensive review by UL Standards Technical Panels. The Coalition is concerned that granting this petition would encourage others to bypass this voluntary standards process, even when there is no evidence that it is not working.

Consequently, the NAM CPSC Coalition respectfully requests that the Commission deny the petition. Thank you for your consideration.

Sincerely,

A handwritten signature in black ink that reads "Stephen Gold". The signature is written in a cursive, slightly slanted style.

Stephen Gold  
Vice President, National Association of Manufacturers  
Executive Director, Council of Manufacturing Associations  
Representing the NAM CPSC Coalition

MILES & STOCKBRIDGE P.C.

62  
Saw comment

DANIEL R. LANIER  
410-385-3651  
dlanier@milesstockbridge.com

CPSC/OFFICE OF  
THE SECRETARY

2003 NOV -6 P 3: 23

November 6, 2003

**HAND DELIVERY**

Office of the Secretary  
Consumer Product Safety  
Commission  
Room 501  
4330 E. West Highway  
Bethesda, Maryland 20814

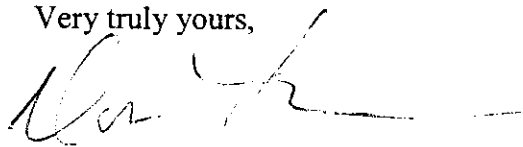
**RE: Comment of Power Tool Institute, Inc. to  
U.S. Consumer Product Safety Commission  
Petition CP 03-2**

Dear Sir or Madam:

Enclosed for filing are five copies of the Power Institute, Inc. Comment to Petition CP 03-2, Petition for Performance Standards for Table Saws.

Thank you for your assistance in this matter.

Very truly yours,



Daniel R. Lanier

DRL/smk  
Enclosures



# power tool institute, inc.

1300 SUMNER AVENUE, CLEVELAND, OHIO 44115-2851 216-241-7333 FAX 216-241-0105

E-Mail: [pti@powertoolinstitute.com](mailto:pti@powertoolinstitute.com) URL: [www.powertoolinstitute.com](http://www.powertoolinstitute.com)

## U.S. Consumer Product Safety Commission Petition CP 03-2

### Petition for Performance Standards for Table Saws

#### Comment of Power Tool Institute, Inc.

Dated: November 5, 2003

Power Tool Institute, Inc.

By: \_\_\_\_\_

A handwritten signature in cursive script that reads 'Susan M. Young'. The signature is written in black ink and is positioned above a horizontal line.

**Susan M. Young**  
Executive Manager

**U.S. Consumer Product Safety Commission Petition CP 03-2**

**Petition for Performance Standards for Table Saws**

**Comment of Power Tool Institute, Inc.**

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## **EXECUTIVE SUMMARY**

The Power Tool Institute (“PTI”) and its members have evaluated the technology proposed in Petition No. CP-03-2: Petition Requesting Performance Standards for a System to Reduce Injuries from Contact with the Blade of a Table Saw (the “Petition”) and have concluded the Petition should be denied for a variety of reasons. These reasons include, but are not limited to, the fact that the Petition: (1) is facially deficient and is without sufficient information for the Commission’s consideration; (2) seeks to have the Commission mandate a design requirement, which is prohibited by Congressional mandate; and (3) proposes speculative and untested technology. In addition, the cost to consumers and manufacturers of granting the Petition would far outweigh any benefits that may be realized. Finally, there are voluntary safety standards governing the design and development of table saws, and the Commission should defer to the voluntary standards organization for further development of safety standards for table saws.

### **The Facial Deficiency of Petition**

As a threshold matter, the Petition on its face is deficient. When viewed in light of the information that is required under the Commission’s policy statement, the Petition fails to provide even the most basic information necessary for the Commission to make an informed judgment on the merits. The Petition, although ten pages in length, contains only six lines on the frequency of the occurrence of injury, one unsubstantiated sentence on the injury costs, and two speculative and undocumented sentences on the costs to consumers and manufacturers to implement a rule consistent with the Petition.

The Commission has long recognized that, in determining preliminarily whether a product presents an unreasonable risk of injury, it must balance the degree of risk and the frequency of injury associated with the product against the potential effect on the cost, utility, and availability of the product. The failure of the Petition itself to provide meaningful data and analysis that might assist the Commission in applying the balancing test is grounds for denial in and of itself.

### **The Petition Seeks A Design Requirement**

Congress has empowered the Commission to evaluate and adopt safety standards for consumer products. Pursuant to Section 7 of the Consumer Product Safety Act, however, the Commission may only adopt performance standards - the adoption of design standards is expressly prohibited. Here, Petitioners seek to avoid that prohibition through wordsmithing.

Although lip service is paid to the unsubstantiated concept that other technology may be able to meet the standard and that it is a performance standard, the four page description of the SawStop technology, the statement of its availability upon payment of an 8% royalty,<sup>1</sup> the speculative estimate of the costs to implement it and it alone, and the final one page exhortation about SawStop leave no doubt that the Petition seeks to mandate the use of SawStop technology

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<sup>1</sup> If the Petition is granted and a standard is adopted requiring the SawStop technology, the Petitioners will have the ability to dictate the royalty percentage.

on all table saws. The three primary Petitioners, who are the SawStop inventors, collectively are the listed inventors on 37 patent applications relating to power tools with brakes. Although it is true that the Petition purports to be worded broadly enough to allow for a solution other than SawStop, it is not true that in the current state of the art there are clear non-infringing alternatives that could be used to satisfy the proposed standard. In fact, one of the most fundamental aspects of patent drafting is to create the broadest claims possible, eliminating to the fullest extent possible any competing alternatives. An analysis by one of our members suggests that at least two patent applications filed by Mr. Stephen Gass, one of the primary Petitioners, arguably cover several aspects of the proposed standard. Thus, not only is the proposed standard a design standard masquerading as a performance standard, which is expressly prohibited, but granting the Petition and any ultimate rulemaking would, in effect, create a monopoly for the Petitioners and for one invention in contravention of the Congressional mandate against design standards. This also likely would result in a multimillion royalty windfall to Petitioners.

### **The Petition Seeks To Mandate Speculative and Unproven Technology**

Getting beyond the facial inadequacies of the Petition, there is no escape from the conclusion that the Petition seeks a rule mandating speculative and unproven technology. No table saw with the SawStop technology has ever been commercially produced, much less distributed and used in real world situations. As Petitioners admit in their Petition, a “high level of proof of viability should be required before taking regulatory action” “in view of the fact that saws incorporating SawStop technology are not yet on the market”. The Petitioners have provided no proof of viability, much less the high level of proof necessary to substantiate the safety and integrity of their proposal. Our members have, however, evaluated and conducted preliminary testing on a prototype table saw equipped by Mr. Gass with the SawStop technology. Based on this testing, our members independently concluded that significant technological problems, as well as extreme costs to consumers and manufacturers should the technology be forced upon the industry, preclude manufacturers from using the proposed technology practically and feasibly on mass produced table saws.

As just one example of the technological problems identified by our members testing, the SawStop equipped saw demonstrated an unacceptably high frequency of “false trips” (i.e., operation of the SawStop braking mechanism in the absence of contact with a human body part) when cutting a variety of wood available at any local lumberyard. Our members’ testing also revealed that the electronic detection system that is at the core of the SawStop technology has numerous deficiencies that could manifest not only in false trips, but also in an outright failure of the detection system. Ironically, the deficiencies in the electronic detection system are confirmed in the BIA and INRS studies that Petitioners attached to the Petition. At this point, the reliability and effectiveness of the proposed technology are, at best, unknown and unproven. This is yet another compelling reason to deny the Petition.

### **The Costs of Granting The Petition Will Outweigh The Benefits**

The available information leads to the conclusion that the costs associated with requiring the proposed standard will substantially outweigh the benefits. In addition to extensive research, development, and testing that will be required by all manufacturers prior to ever implementing

the unproven technology on a mass produced product (assuming it can even be done), there will be other significant costs to manufacturers, including complete retooling and redesigning for every model of saw sold. PTI members estimate these costs, per company, range from two to ten million dollars based on the number of models that will have to be redesigned and, moreover, these costs will have to be passed onto consumers.

Further, the costs for adding the hardware needed to implement the proposed technology, plus any royalty that will have to be paid to Petitioners, will raise the price of a table saw even more. Even Petitioners acknowledge that the price of a table saw could rise 25%, which is a significant price increase in an already competitive market. Our members believe that the percentage increase will be much higher, particularly on some of the consumer saws that sell for less than \$200.00. Indeed, mandating the proposed technology likely will eliminate these lower cost consumer saws from the market, forcing consumers to less safe or significantly more expensive alternatives.

Finally, consumers also will bear the cost of having to purchase additional braking devices for dado and other non-standard blades, as well as a replacement cartridge in the event of activation. Even by Petitioner's assessment, these additional braking devices will cost between \$59.00 and \$69.00 a piece. In the event that the braking device is activated, even for false trips, damage to the blade is likely from the aluminum braking device. Thus, the consumer will have to replace the blade, some of which can cost up to \$100.00.

As one can readily see, the overall costs to consumers and manufacturers to implement the unproven, unsubstantiated, and untested technology are monumental.

### **Petitioner's Injury Statistics Mis-state Benefits**

As to the benefits, Petitioners have cited injury statistics in the Petition in an effort to establish that table saws are unsafe. These injury statistics are broad reaching estimates. In fact, a detailed analysis of the actual accident statistics in light of the number of uses of table saws in the United States reveals that table saws are, in fact, a relatively safe product. Moreover, the data suggest that the injury rate on table saws has actually decreased dramatically over the last ten years due to efforts by the industry to improve table saws and promote their safe and proper operation. This, coupled with the fact that the proposed technology does not prevent injuries, nor does it even prevent all amputations or serious lacerations, shows that, even if it can be developed to a reliable and useable point, the extreme costs associated with implementing the proposed technology far outweigh any benefit.

### **The Commission Should Defer Any Action to the Appropriate Voluntary Standards Organization**

There is no dispute that table saws are the subject of a voluntary standard promulgated by Underwriters Laboratories, Inc. ("UL"): UL987-Standard For Stationary and Fixed Electric Tools ("UL987"). All table saws manufactured and sold by PTI members comply with the provisions of UL987. Indeed, PTI believes that all table saws subject to the proposed technology sold in the marketplace comply with UL987.

UL, which has as its primary directive the safety of products, continually reviews and revises all of its standards, including UL987. Additionally, UL conducts product testing to ensure compliance with its standards. In keeping with its goal of continued safety advances, UL has established a Standards Technical Panel for Electric Tools, which is directly charged with reviewing UL987. This Panel is comprised of individuals from several PTI member companies; Commission staff; users of table saws; general interest groups; and even Steven Gass, one of the Petitioners. The Panel is currently not only reviewing UL987, but is also reviewing proposals from participants relating to technology designed to improve the safety of table saws. In fact, Mr. Gass submitted a proposal nearly identical to that which is before the Commission. The STP panel, after considerable debate, has raised numerous concerns including reliability, the impact of high braking forces on small table saws and economic considerations. Further, the STP concluded that significant research is necessary before the STP can begin to consider requiring such a system on table saws. Mr. Gass was informed that the proposal can be resubmitted to the STP Panel for voting. Mr. Gass did not resubmit his proposal. In light of the ongoing efforts of the Standards Technical Panel for Electric Tools, the Commission should deny the Petition and allow the voluntary standards process to continue to improve table saw safety, including evaluation of the technology that is the subject of the Petition.

As a final matter, the Commission should note that denying the Petition will not foreclose the Petitioners from marketing table saws equipped with the SawStop technology. In the event it can be developed and fully implemented into a mass produced product, consumers will have the choice of whether to purchase a SawStop equipped saw without the Commission imposing on the entire public the costs associated with a mandatory standard. This way, the Commission can let the market decide if this unproven and untested technology is valid and desired.



## STATEMENT OF INTEREST

PTI is the leading trade organization in the United States that has members engaged in the manufacture or assembly of electric or battery operated professional or consumer portable and stationary power tools. The purpose of PTI is to promote the common business interests of the power tool industry, to represent the industry before government, to educate the public as to the usefulness and importance of power tools, to encourage high standards of safety and quality control in the manufacture of power tools, and to prepare and distribute information about safe use of power tools. PTI has eleven members, seven of the current PTI members manufacture table saws. These seven companies are as follows: Black & Decker (U.S.) Inc.; Hitachi Koki, U.S.A., Ltd.; WMH Tool Group, Inc.; Makita USA, Inc.; Pentair Tool Group; Robert Bosch Tool Corp.; and Ryobi Technologies, Inc. These seven companies collectively have over 200 years of experience in the table saw business and currently market a total of 50 different models of table saws. The past and the current PTI members account for approximately 95% of the sales of all table saws sold in the United States during the last decade.

Historically, PTI and its members have been successful in identifying potential hazards associated with power tools, including table saws, and continually improving the safety of their products. As part of this process, PTI and its members have always worked through the voluntary standards organizations such as Underwriters Laboratories and ANSI to develop standards that reduce and eliminate hazards associated with power tools. For example, PTI was instrumental in the introduction of the double insulation concept in the United States. With the introduction of double insulation, PTI sought to reduce the frequency of electric shock injuries and electrocutions associated with the use of improperly grounded tools and lawn and garden equipment on household circuits with defective or missing grounding or when the electrical plug

or cord has been modified by the consumer. PTI introduced double insulation through the voluntary standards process, working with UL in creating the construction and acceptance requirements that were placed in the UL standards for electric tools, lawn and garden equipment, and eventually all products covered by UL standards. Likewise, PTI also was the driving force that changed the National Electric Code and OSHA to allow the use of double installation as an alternative to grounding. As another example, PTI worked with the Commission, UL, and various consumer groups to develop a voluntary standard for hedge trimmers – UL 1448 – in response to the Commission’s concerns relating to hedge trimmer accidents. Similarly, PTI and UL addressed the Commission’s concern for portable circular saw injuries by revising the voluntary standard for Portable Electric Tools – UL 45 – to improve guarding, warnings, acceptance testing and instructions. As a reaction to injuries obtained on miter saws, PTI also initiated a revision to the guarding requirements in the voluntary standard for Stationary and Fixed Electric Tools – UL 987. As one final example, upon learning that tool users were receiving electric shocks when drilling or cutting into walls that contain electric wiring, the power tool industry, primarily through PTI and UL, proposed and developed standard requirements for insulating gripping surfaces on tools that are now required on all tools that could expose users to this hazard.

These are just a few of the examples that demonstrate PTI’s commitment, through its members, to maintaining and improving the safety of all power tools, including table saws. As discussed in Section VI below, PTI and its members are currently engaged in numerous activities designed to improve the safety of table saws even further. As discussed in more detail below, efforts by PTI and its members over the past ten years have resulted in the table saw accident rate dramatically declining, and PTI seeks to reduce the accident rate even further through its

continued efforts to improve the safety of table saws.

## COMMENT

### **I. Introduction**

On July 9, 2003, the Commission published a Notice soliciting comments to the Petition. 68 Fed. Reg. 40912 (July 9, 2003). By Notice published in the Federal Register on September 5, 2003, the Commission extended the comment period through November 7, 2003. 68 Fed. Reg. 52753 (September 5, 2003).

The primary Petitioners are Stephen F. Gass, David A. Fanning and James David Fulmer. According to the Petition, those Petitioners are members of SD3, LLC, a limited liability company holding patent rights to SawStop technology, which the Petition seeks to impose on all table saws through a mandatory standard.

Because the Petition addresses safety issues on table saws, PTI and its members have undertaken to evaluate the proposed standard and, more importantly, the technology proposed in the standard. Based on this evaluation, PTI and its members oppose the Petition for the reasons discussed below and respectfully request that the Commission deny the Petition.

PTI, the leading trade organization in the United States for members engaged in the manufacture or assembly of electric or battery operated professional or consumer portable and stationary power tools, files these comments in opposition to the Petition.

### **II. The Petition is Deficient on its Face**

Notwithstanding the significant technical problems associated with the proposed technology as well as the significant costs associated with implementing the technology relative to the benefits, the Petition, on its face, fails to even begin to provide the Commission with the

information necessary to make an informed judgment on its merits.<sup>2</sup> The Commission's rules at 16 CFR § 1051.9 set forth the factors that the Commission considers in deciding whether to grant a Petition. These include: (1) whether the product involved presents an unreasonable risk of injury; (2) whether a rule is reasonably necessary to eliminate or reduce the risk of injury; and (3) whether the failure to initiate the rule-making proceeding requested would unreasonably expose the Petitioner or other consumers to the risk of injury that the Petitioner alleges is presented by the product.

In considering each of these factors under 16 CFR § 1051.9(b), the Commission looks to the relative priority of the risk of injury associated with the product and the resources available for ruling-making activities. This subsection, in turn, references the criteria upon which the Commission bases its priority decisions as factors that the Commission also considers in its evaluation of the merits of any petition. 16 CFR § 1009.8. A number of the criteria the Commission uses to establish its priorities are directly relevant to the Petition. The Commission considers the frequency and severity of injuries, as well as causality — that is, the extent to which the product and other factors such as human behavior are causally related to the injury pattern. Part of this analysis includes the degree of consumer awareness of the hazard and its consequences. In addition, the Commission considers the probability of exposure to the hazard, including the number of products used by the consumers, the frequency of use, and the likelihood that in the course of typical use, a consumer would be exposed to the identified risk of injury.

The Commission also considers, on a preliminary basis, the prospective costs of Commission action to consumers and manufacturers and the benefits expected to accrue from the

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<sup>2</sup> Although the Commission does not require extensive documentation on each and every criterion before making a decision, it is equally clear that a Petitioner has an obligation to provide the Commission with adequate data to assist

resulting reduction of injuries. The elaboration in the policy statement of the types of information that go into the cost/benefit equation is instructive.

“Consideration of product cost increases will be supplemented to the extent feasible and necessary by assessments of effects on utility or convenience of the products; product sales and shifts to substitutes; and industry supply factors, competitive structure, or employment. While all of these facets of potential social ‘cost’ cannot be subsumed in a single, quantitative cost measure, they will be weighed, to the extent that they are available, against injury reduction benefits. The benefits will be based on (i) explicitly stated expectations as to the effectiveness of regulatory options (derived from . . . the causality of injuries); (ii) costs of injuries and deaths based on the latest injury cost data and analysis available to the Commission; (iii) explicit estimates or assumptions as to the average product lives; and other factors.”

16 C.F.R. § 1009.8(4).

When viewed in light of the information that the Commission’s policy statement states is relevant, the Petition fails to provide the Commission with any of the information necessary to make an informed judgment. In fact, the Petition consists of:

1. A one-page detailed summary of each requirement that a table saw would have to meet if the Commission promulgates the requested rules;
2. One six-line paragraph that summarizes general extrapolated statistics on table saw injuries from the NEISS system for calendar year 2001 followed by two pages of photographs showing purported table saw injuries;
3. A three-paragraph analysis speculating on why table saw incidents occur, including an unsupported and unsubstantiated explanation of why consumers either remove or do not use blade guards on table saws;
4. An eight-line paragraph discussing the cost of injuries, which includes a single sentence that evaluates those unsubstantiated costs. That sentence contains the conclusory, unsupported and undocumented statement that “the average cost per

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it in making a decision.

serious injury ... could easily exceed \$5,000.00 to \$10,000.00 . . . .”;

5. A one-paragraph statement, again in summary form, that the existing Underwriters Laboratory Standard, UL 987, is inadequate because injuries continue to occur;
6. A four-page description of how SawStop works, and the awards it has won;
7. A paragraph advertising the availability of SawStop to manufacturers for a royalty of 8% of the wholesale cost of each saw, with the unsubstantiated and over-reaching statement that there may be other systems that could be used to satisfy the proposed standard;
8. Two sentences, again unsubstantiated and undocumented, that speculate that the cost of implementing the SawStop technology would be less than an average cost increase of 25% per table saw, including the royalty, and that the cost is “likely to decrease as the technology matures;” and
9. A one-page exhortation to the Commission to proceed with standards development.

The Petition itself is ten pages long; however, length does not equate with adequacy. As the foregoing analysis shows, the Petition contains only six lines on the frequency of the occurrence of injury, one unsubstantiated sentence on injury costs, and two speculative and undocumented sentences on the costs of implementing the rule. The utter failure of the Petition to provide meaningful and substantiated data that might assist the Commission in applying this balancing test is grounds for denial.

Not only does the ten-page Petition fail to provide any useful information to the Commission, but the attachments likewise provide no meaningful data to assist the Commission in balancing the degree of risk and frequency of injury against the potential effect on the cost, utility and availability of the product. Attached to the Petition are: (1) a July 19, 2001

memorandum from Caroleene Paul of the CPSC to Ronald Medford, Assistant Executive Director of the CPSC (Pet. Att. at 377-383<sup>3</sup>); (2) a report of a study conducted by BIA, a German engineering company (Pet. Att. at 385-397; 441-452); and (3) a report prepared by INRS, a French engineering company<sup>4</sup> (Pet. Att. at 399 to 439). A review of these reports, which are very limited, not only fails to provide the Commission with any meaningful data to assist the Commission in applying the balancing test, but the reports actually undermine the claimed efficacy of the proposed technology and, in fact, provide independent proof of the significant technical problems identified by the PTI members in their testing.

As indicated by Ms. Paul in her memorandum, the CPSC did preliminary testing on a hand built prototype of a table saw incorporated with the SawStop technology. As referenced on page two of Ms. Paul's memorandum, issues of reliability and robustness over the life of the product could not be evaluated. The only issue evaluated was whether or not the basic concept of the device addresses a known hazard pattern in an effective way. In the limited testing conducted by the CPSC, several limitations were identified. First, the device would not work with blades that contained a plastic hub and, more importantly, wet green wood or wet pressure treated wood could result in an unnecessary false tripping of the braking device.<sup>5</sup> As Ms. Paul noted on page 6, "[a] significant amount of further development work may be required before this device could be incorporated into production saws, both because of the need to adapt the concept to mass production and to address some of the issues that still require refinement." (Pet. Att. at 382).

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<sup>3</sup> For ease of reference, attachments to the Petition are cited to the page numbers supplied by the Office of the Secretary as "Pet. Att. at \_\_\_\_."

<sup>4</sup> The evaluations, as limited as they were, conducted by BIA and INRS came about because BIA and INRS were among the hosts of a European power tool symposium to which Mr. Gass was invited.

<sup>5</sup> A detailed discussion of why wet green wood and pressure treated wood causes the unit to false trip is included in section IV.A.1. below.



Even less supportive are the BIA and INRS studies. The BIA study, which BIA characterized as “crude”, identified significant false trip problems with wood having a moisture content above a certain level. The BIA study also questioned the integrity of the electrical system. (Section 2.3, Pet. Att. at 444). BIA expressly acknowledged that the significance of its evaluation was limited, and BIA indicated that a “detailed analysis of the detection system is required.” (Section 4, Pet. Att. at 451-52). The limitations identified with the detection system and the false trip problem caused BIA to recommend severe restrictions on any proposed use of the technology. In fact, BIA recommended that the technology could only be used on: (1) woodworking machines in moisture protective environments in which various wood types with residual moisture contents of up to 25% are used and, even then, only on machines on which the feed rate—the rate at which the hand or other body part approaches the blade—is limited to approximately 7 inches per second; or (2) on machines with high potential for injuries in which the achieved safety effect outweighs a potential reduction in system availability. (Pet. Att. at 452).

Interestingly, the Petition states that the proposed detection system must stop the blade after skin contact such that it would only cause a cut no deeper than 1/8 of an inch when the feed rate (the rate at which the piece being cut or the body approaches the blade) is **12 inches per second**. The BIA report suggests that in order for the proposed technology to be effective, the feed rate must be, at most, **7 inches per second** due to the relatively slow reaction time of the system. (Section 3.3.3, Pet. Att. at 451). Thus, the BIA study not only identifies serious technical problems with the proposed technology, but it recommends restrictions on the technology far greater (by 41.7%) than that proposed in the Petition.

Finally, the INRS study likewise identified numerous problems with the detection system

and, particularly, the electronics associated with the detection system. Like BIA, INRS identified false trip problems with wet wood. INRS also expanded on the false trip issue by adding that there is the potential for a tripping failure if the blade is merely touched due to the fact that the circuit does not detect short-circuiting of the input coupling before switching on. (Pet. Att. at 412). In conclusion, the INRS report states that, “[a] brief examination shows that the data processing circuit has not been designed according to design rules covering operating safety (fault detection, architecture, etc.), although it does provide self-control functions. Neither is it capable of sustaining external influences (electrostatic discharges).” (Pet. Att. at 413).

Thus, nothing in the Petition or any of the attachments provides the Commission with any useable data to assist the Commission in evaluating the merits of the Petition. Indeed, the attachments actually undermine the Petition.

### **III. The Petition is a Request for a Design Standard**

As the Commission well knows, Section 7 of the Consumer Product Safety Act authorizes the Commission to promulgate consumer product safety standards that include requirements expressed in terms of performance, but expressly prohibits the Commission from promulgating standards based on design. The purpose of this provision is to assure that government action does not stifle product innovation. Even a cursory review of the Petition reveals that, although the first page of the Petition purportedly describes a performance standard, the balance of the Petition is devoted to a discussion of the SawStop technology which, not coincidentally, is the invention of the three primary Petitioners and on which the Petitioners have applied for numerous patents.

There can be little question that the Petitioners seek to mandate the use of the SawStop technology on all saws. Although it is true that the standard is worded broadly enough to allow

for a theoretical solution other than the SawStop technology, it is not realistic to assume that there, in fact in the current state of the art, are non-patent infringing alternatives that could be used to satisfy the proposed standard; especially considering the Petitioners have already filed numerous patent applications covering the proposed system.<sup>6</sup> Mr. Gass, a patent attorney by trade and one of the Petitioners, is the listed inventor in 37 published U.S. patent applications calling for power tools and brakes, while the other two Petitioners, David Fanning and James Fumer, each are listed as inventors on 18 applications. A preliminary patent analysis by one of our members suggests that at least two of Mr. Gass's very broad patent applications purport to cover several aspects of the proposed standard. For example, in Claim 1 of Mr. Gass's patent application No. 2002/017, 181, Mr. Gass calls for a detection system for detecting a dangerous condition, without calling out any structural requirements. The application thus presents Petitioners' position that to avoid infringement of this Claim, a manufacturer would not be able to provide a detection system, which, of course, would violate the proposed standard. This patent application (No. 2002/017, 181) also covers a detection system that retracts the blade, and Mr. Gass has a second patent application (No. 2002/0 17, 175) that covers a system that stops the blade upon detection. Thus, although the first page of the standard is craftily worded to suggest to the unwary that it is a performance standard, the reality is that the Petitioners have applied for patents on all significant components of the design standard sought in the Petition. Assuming the patent applications are granted, all roads leading to compliance with the proposed standard go directly to Petitioners and to their design.<sup>7</sup> In this regard, the proposed standard is, in effect, a

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<sup>6</sup> The analysis presented in this section is not intended to constitute an opinion on the validity or extent of any patents held by Petitioners or related to the SawStop technology.

<sup>7</sup> Petitioners state that "like any mechanical or electrical system, SawStop may have some failures." While manufacturers may be forced to obtain a license and pay royalties, as well as the related costs, Mr. Gass has refused to indemnify the manufacturers, who will incur all of the liability if the device fails and manufacturers are sued. On the one hand, the Petitioners claim that their device will prevent injuries and reduce the economic costs associated

design standard cloaked in superficial language calling it a performance standard.

The specificity of the proposed standard and the discussion of the SawStop technology, coupled with the broad and numerous patent applications filed by the Petitioners, are attempts to effectively foreclose development of alternative technology that would comply with the requested standard.<sup>8</sup> From a policy perspective, the Commission should heed its Congressional mandate and avoid regulatory action that would create a monopoly for one invention.

#### **IV. Consideration of the Commission's Criteria Mandates Denial of the Petition**

As indicated above, the Petition provides no hard data on costs, benefits, and the other factors that the Commission considers in determining whether to grant a Petition. PTI and its members, however, offer the following information to assist the Commission in analyzing the Petition. As this discussion demonstrates, table saws are relatively safe, and the cost to implement the proposed technology outweighs any safety benefit that would be derived. This, in conjunction with the fact that the SawStop technology is unproven, forcefully directs that the Commission deny the Petition.

##### **A. The SawStop Technology is Unproven and Speculative**

Requiring the proposed technology would mandate the use of technology that is untested and unproven. Indeed, no table saw with the proposed technology has ever been commercially produced, much less tested and evaluated over time to demonstrate its feasibility on a marketable product. This, in and of itself, is an insurmountable hurdle to granting the Petition. Even one of the primary Petitioners seems to recognize this when he states, "We recognize that there is only a

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with them, but when it comes to backing the effectiveness and reliability of their invention, they have refused to do so. This lack of confidence in their own technology is alarming to say the least, especially when they have so much to gain.

<sup>8</sup> To the extent any manufacturer manages to develop a non-infringing method of complying with the proposed standard, it is a virtual certainty that doing so without a license from Petitioners would lead to the expense and uncertainty of lengthy patent infringement litigation.

very small chance the petition will be granted, mainly because our saws are not yet in the field.” (See communication from David Fanning of SawStop LLC dated 7/14/03 at page 2 attached as Exhibit A).<sup>9</sup>

Notwithstanding the lack of a commercially available product, our members have identified significant technical problems associated with the use of the proposed technology in a reliable, acceptable, and feasible fashion on a mass-produced product. Below is a discussion of the various issues our members have identified based on their evaluation of one or more iterations of a prototype SawStop equipped table saw.

**1. The SawStop technology will not be accepted by consumers due to the high propensity to false trip.**

One of the most problematic technological problems our members uncovered in evaluating a prototype table saw equipped by Mr. Gass with the SawStop technology was the high propensity to false trip. A false trip occurs when the braking mechanism activates unnecessarily in the absence of human contact. A false trip can occur under a number of circumstances, including cutting green wood, cutting wet wood, the failure of the capacitance coupling system, or static buildup during use of the saw.

Marketing analyses by our members reveals that consumers have an extremely low tolerance for false trips. Indeed, one of our members estimates consumer tolerance for false trips is less than one. In other words, consumers, on average, would be dissatisfied with the product if there is even one false trip incident. That member concluded, based on testing the SawStop equipped saw, that the technology did not present a “marketable saleable product.” The high

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<sup>9</sup> At a woodworking show held in Spring 2002, the SawStop Petitioners indicated their intent to manufacture saws with this technology. Orders were taken with anticipated delivery by year-end 2003; however, no saws have yet been delivered, nor are they available. Indeed, Mr. Gass has recently issued a letter indicating that, despite prior assurances that the saws would be available by the end of 2003, the saws will now not be available until 2004 because of continued “improvements”. (See copy of letter attached as Exhibit B).

number of false trips that occurred during our members' testing demonstrated that the product is virtually unusable in a real world woodworking environment.<sup>10</sup> Due to the low tolerance for false trips, these types of failures would cause a very large percentage of the product to be returned by highly disgruntled users in a very short timeframe. As discussed in Section IV.C below, a false trip can also result in significant cost and inconvenience to the user. These costs include the actual cost of a replacement cartridge (which can be as high as \$69), the down time and inconvenience to replace the cartridge, and the replacement cost of a new saw blade.

The predominant situation where a false trip was found to occur was in cutting wet or green wood. All wood, by its very nature, contains some moisture. Wood also has the ability to absorb additional water from the environment if left outside in the rain or an otherwise moist environment. Pressure treated lumber, which is used extensively in all aspects of the construction industry, actually has moisture added to it in the course of the pressure-treating process. The greater the moisture content of wood, the greater likelihood that the SawStop technology will activate the braking mechanism upon contact with that wood.

False trips were found to occur with yellow pine, red oak, and extensively with pressure treated decking lumber.<sup>11</sup> All of the lumber was purchased at local lumberyards such as The Home Depot, Lowes Home Improvement Warehouse, and 84 Lumber. In one test, a rip cut of water-soaked pine was completed, and a false trip occurred when the operator was walking around to turn the saw off. No one was actually touching any part of the saw or was even close to it. Interestingly, this testing occurred at the same time Mr. Gass made claims that a saw

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<sup>10</sup> As noted below, in order to permit the saw to cut metal and use some particular blades, a bypass switch allowing the user to bypass the SawStop system must be included on the saw. Users frustrated with false trips will be easily able to bypass the system, thus negating any of its benefits.

<sup>11</sup> The types of lumber used during our members' testing included 2"x 6", 8", 10", or 12" by 8' yellow pine framing lumber, red oak, CDX plywood, particleboard, OSB wafer board, masonite, and 2" x 10" x 8' pressure treated decking lumber.

equipped with SawStop technology would encounter no problems cutting wet or green wood.<sup>12</sup>

The primary reason that the SawStop technology has a propensity to false trip is because the system relies on differentiating between the impedance of wood and the impedance of human skin. Impedance is the ability to resist the flow of electricity. The higher the impedance, the higher the resistance the object has to the flow of electricity and, conversely, a lower impedance indicates that the object would conduct electricity very well. Rubber gloves would have a high impedance relative to copper wire, which would have a relatively low impedance. The SawStop system is designed such that its detection software assumes that the impedance characteristics of wood fall into one range, while the impedance characteristics of humans will fall into a completely separate range. The electronics are designed to monitor the impedance of objects coming into contact with the blade. When an object, be it skin, wood, or anything else touches the blade, the object, in essence, draws off some or all of the capacitance charge that is applied to the blade. When the electronic system detects an object within the impedance range of human skin, it activates the braking mechanism. False trips occur because many objects, including wood with a high moisture content, mimic the impedance characteristics of human skin.

Contrary to representations made by the Petitioners, the range of impedance levels of wood is not narrow. In addition, the range of human capacitance is not the same from person to person and actually varies with the surface area of the body. As such, the impedance characteristics also vary from person to person.<sup>13</sup> Our members' testing shows that there is a

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<sup>12</sup> Despite several "corrections" to the detection system to correct the false trip problem, the SawStop website has maintained from the beginning that there are no problems cutting wet or green wood. (See Exhibit C, which is a page printed from the SawStop website in July of 2001). These statements also were made prior to the testing by BIA and INRS discussed above that found false trip problems.

<sup>13</sup> Research reveals that capacitance of the human body can range from 85 to 300 Picofarads. This variation is based upon weight, degree of moisture on the skin, temperature, humidity, etc. Some data on human impedance variation is contained in IEC 479-1: Technical Report—Type 2, "Effects of Current on Human Beings and Livestock—Part 1: General Aspects" (International Electrotechnical Commission, 1994).

broad overlap between the impedance of human beings and the impedance of various types of wood. Because the SawStop detection system relies on the fact that the impedance of wood can be differentiated from the impedance of a human being, the result of this overlap is that the system is not able to distinguish between human flesh and certain types of wood. Thus, the proposed technology frequently false trips because the detection system erroneously detects an object that it is designed to interpret as human skin, but is actually wet wood, pressure-treated wood, or wood with an inherently low impedance level. One member's testing showed that the design of the proposed technology has a tendency to trip almost one-third of the time across the range of wood species and moisture contents.<sup>14</sup>

The Petitioners attempt to address this problem by proposing in the standard that the system only has to operate properly when cutting natural wood with a moisture content of up to 50% and glued wood with the moisture content of up to 30%.<sup>15</sup> These arbitrary values do not accurately predict when the SawStop system will false trip. Although there is some correlation between the moisture content of wood and its impedance, the correlation is not direct. In other words, a piece of wood with a moisture content of 8% could actually cause the SawStop system to false trip due to the low impedance properties of that particular type of wood. For example, pressure treated wood contains various salts that drastically lower the impedance of the wood. The false trip problem is further compounded because users will not have any means to determine the moisture content of wood. Wood dries out from the surface, leaving the center at an elevated moisture level. A user would not be able to determine the moisture content of the wood simply by the condition of the surface. Our testing shows that users will frequently

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<sup>14</sup> Not only did our members' testing reveal significant issues with false trips, but the BIA study also identified a similar problem, particularly when cutting wet wood or pressure-treated wood.

<sup>15</sup> Parenthetically, the Petitioners seem to be acknowledging that wood with a moisture content above these levels will cause the system to false trip.



encounter wood with moisture contents above these levels at any local lumberyard. We know that pressure-treated wood is not only designed to be used in wet locations, but it is often shipped, stored, and sold in outdoor locations, thereby adding to the moisture content of the wood.

Other aspects of the design also resulted in a propensity to false trip. At the core of the proposed technology is the ability of the detection system to detect when an object touches the blade which, in essence, then draws off some or all of a small static, or capacitance, charge applied to the blade. This capacitance charge to the blade must be completely insulated from all other parts of the saw. The capacitance coupling system is the mechanism by which the proposed technology isolates the capacitance charge to the blade from the rest of the table saw. The proposed design requires very tight manufacturing tolerances on many of the parts integral to the capacitance coupling system. If the capacitance coupling system fails in any way, the charge that is designed to be directed solely to the blade is diverted to another part of the table saw, and the unit will false trip.

Our members concluded that false trip scenarios also occur because unshielded wire in the detection system must be used in light of the fact that shielded cable attenuates the capacitance signal of the blade. In other words, shielded wire adversely effects the ability of the system to maintain a static charge to the blade, which is critical to the functioning of the system. Unshielded wire, however, makes it more likely that there will be false trips because unshielded wire, if allowed to vibrate and touch the chassis, will cause a false trip. Indeed, the INRS study attached to the Petition indicates that, when tested in accordance with IEC standards, the system tripped and the test was suspended because of its low immunity. (Pet. Att. at 412).

The static discharge system contributes to false trips as well. Because of the necessity for

blade isolation in the capacitance coupling system, the cutting of plastic and other dry materials has a tendency to build an electrostatic charge on the blade until it arcs to a lower potential material. Sudden discharge can not only false trip the machine, but also could damage the internal sensing components beyond repair.

Finally, UPC labels are frequently stapled into the ends of lumber. These staples could cause a false trip if one should create an electrical path between the blade and the table or fence while cutting the staple. The same false trip scenario could occur if a user cuts a piece of lumber with a nail embedded in the wood and the nail actually touches the table or the fence.<sup>16</sup>

It is also important to note that the false tripping that was realized by our members occurred with a custom hand built prototype model where the very crucial tolerances built into the capacitance coupling system could be controlled. It will be critical during mass production to control the tolerances in the system, for without these close tolerances, the system will either false trip or will not work at all. Manufacturing will be very difficult, and, even assuming it can be accomplished, the need for very close tolerances will add a significant cost in order to provide the level of precision required to assure that the capacitance coupling system operates properly. An additional concern is that the unexpected failure of the system could create additional safety issues because users may develop a false sense of security that they can not be harmed.

Taking all of the above factors into consideration (i.e. impedance ranges of wood, problems with static discharge, shielded and unshielded wire, the possibility of cutting nails or staples, the need for close tolerances, etc.), one member ran a Monte Carlo analysis to determine the probability of false trips. The analysis showed that the likelihood of false tripping was 27.8% and, when the analysis was concentrated to the first inch of material to be cut, the chance of false

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<sup>16</sup> The BIA study found that the unit was also susceptible to false trips when exposed to radiated electromagnetic fields, making the unit unacceptable, according to BIA, for industrial applications.

tripping was nearly 40%.

**2. In addition to false tripping, there are other technological problems presented.**

Although false tripping was one of the more significant technological problems identified, another serious technical issue identified by our members is that the SawStop technology is designed to be used on a table saw drive system where the motor can be decoupled from the blade—customarily requiring a belt-driven saws. The majority of table saws sold in the United States, however, are gear-driven machines with a universal motor. These saws have a small amount of space behind the blade requiring any stopping module to be smaller than currently developed.

Setting the lack of space for the stopping/braking module aside, it is important to understand the impact of the two different drive trains on the performance of the proposed technology. With a belt-driven saw, the motor is physically separated from the belt driven output spindle and blade. The blade braking mechanism on a belt-driven saw needs to only absorb the kinetic energy of the blade, since the force created by the angular momentum of the decelerating blade is used to move the blade and associated belt-drive pulley towards the motor, thus automatically disengaging the motor. In contrast, with a gear-driven saw, the motor, gear train, and output spindle and blade are physically connected. When the blade braking mechanism is engaged, it is not only the kinetic energy of the blade that must be absorbed, but also the gear train and motor. The rotating armature of a universal motor typically has six to eight times the kinetic energy of the blade. As such, stopping the gear-driven table saw with the braking module in the proposed technology would be very difficult, if not impossible. Most certainly, the result would be much more erratic and slower stopping times. This problem is

compounded because the mass of the motor, gearbox and blade mechanism is greater than in the prototype belt-driven saws. The greater mass retracts much more slowly into the table during the braking process as a result of the force created by the conversion of angular momentum. These blade braking and blade retraction factors compromise the proposed blade stopping system on gear-driven saws.

An additional problem with a gear-driven saw is the impracticality of employing the proposed capacitance coupling to the blade and arbor shaft. The proposed technology requires a substantial surface area in close proximity to the shaft. With a gear-driven saw, there is a significant reduction in the surface area where the proposed capacitance coupling would have to take place. A reduction in the surface area of the capacitance coupling system will decrease the sensor resolution and, therefore, increase the likelihood of false trips even beyond that found with the belt-driven prototype.

Even assuming the proposed SawStop technology could, after considerable research and development, be implemented on a gear-driven saw, these model table saws would require a total redesign that would result in a significant cost increase in the product. Furthermore, many of these gear-driven saws are low cost, high volume models. Due to the increased costs, such low cost entry-level table saws likely would be eliminated from the market altogether.

### **3. The Durability, Reliability, and Robustness of the Design are Questionable.**

The durability and reliability of the SawStop components needs to be evaluated in terms of the expected upper range of the product life, which may be as long as twenty years, but is at least ten years. Petitioners have not, nor can they, offer any evidence concerning the reliability and robustness over time of the proposed technology. No mass produced saw has been made,

much less tested over time.

Although no long term testing has been done, our members have identified several issues that would impact the robustness of the design in a mass produced product. First, the requirement that unshielded wires be used presents a reliability problem, particularly for units used in the field. As indicated, unshielded wires could vibrate and contact other components causing the unit to false trip. One must consider that many of these units will be transported in the back of pick-up trucks from job site to job site. With a life expectancy of at least ten years, the possibility that unshielded wires could become loose and vibrate to the point that they could touch a grounded component is a significant design concern. And, as mentioned above, consumers have an extremely low tolerance for false trips.

Another problem associated with the robustness of the design concerns the use of the fuse wire that releases a compressed spring behind the braking pawl when the system is activated. No long-term tests concerning the effect of contamination from environmental factors have been performed to determine how the fuse wire will function over time. Corrosion of the fuse wire could result in the fuse wire not operating at all, and thereby the system would not activate in the event of contact with the blade. Again, this is another unknown and untested element of the unproven and speculative technology that is proposed. The same can be said with respect to contamination of the entire detection system. Stated simply, no testing has been accomplished to determine the long-term effect of environmental contamination to the system in what is, in many cases, a demanding environment.

Yet another reliability concern is the fact that, in the event the system is activated, the user must replace the braking cartridge. It is unknown at this point whether the broad range of users will be able to install a new cartridge properly without impacting the operation of this

system.

In sum, the SawStop technology has not been subjected to complete and independent testing necessary to demonstrating not only that the technology will perform as proclaimed, but also that it presents a robust design that can be mass produced and result in a reliable safety system. Testing by our members suggests that, in fact, the SawStop technology will not perform as proclaimed, and that there are significant design issues presented if one attempts to mass produce a SawStop equipped saw.

**B. The Benefits of the Proposed Technology are Tenuous and Unquantifiable.**

Despite Petitioners' grandiose claims, it is evident that the benefits of the proposed system are modest at best. Table saws are cutting instruments. Their users are typically adults and the hazard that blade contact presents is self-evident. All of the PTI members' table saws comply with voluntary standards for safety. In addition, every table saw sold comes with detailed instructions and warnings telling consumers how to use the saws properly and the precautionary steps they must take to protect themselves. While table saw injuries are unfortunate, virtually all of the incidents result from the failure of users to follow the instructions and/or to keep blade guards in place. Accordingly, the risk of injury associated with table saws is not the type of hidden or unseen injury against which users are unable to protect themselves, nor is the user population incapable of protecting itself.

Petitioners cite NEISS data in support of their proposition that table saws are dangerous. In particular, Petitioners state that there are an average of 30,000 table saw accidents per year and that approximately 10% (3000) of these result in amputations. Although the NEISS data certainly is useful, its limitations must be recognized. The estimate of over 30,000 injuries per year is extrapolated based on only 692 actual injury reports from 2001. The data is derived from

a sample of emergency rooms throughout the country. Each sample emergency room where data is derived is assigned a weight based on the total number of emergency rooms it represents. As such, a relatively small sample (692) is used as the basis for the projection of 30,000 table saw injuries.

Although not conclusive, the experience of PTI members suggests that the actual number of related table saw injuries per year is far less than the injury totals extrapolated from the NEISS incident reports. The PTI members that have manufactured table saws from January of 1992 to the present have reported only 713 injury causing accidents for the same time period. Although certainly not every injury results in a claim or lawsuit, one would have expected a significantly higher number of reported accidents if there had been 30,000 table saw related accidents per year, 3000 of which resulted in amputations.

Putting aside the limitations on projecting the total number of injuries, a detailed review of the 692 actual injury reports reveals that a significant portion of the claimed injuries would not have been prevented or lessened by the proposed SawStop technology. As one might expect, the actual incident reports that form the basis of the NEISS estimate of 30,000 injuries cover a broad range of differing accident scenarios, from hands slipping off a work piece when feeding the wood to someone hurting their back while lifting their table saw. Of the 692 claims reported in 2001 that are the basis for the NEISS data cited by Petitioners, 30% did not involve blade contact at all, and thus, would not have been prevented by the proposed technology. For example, in one reported incident, the user was drunk and fell and hit his head on the table saw.

Moreover, the standard proposed by the Petition seeks to prevent or ameliorate only a subset of the remaining 70% that involved blade contact injuries. Specifically, the proposed technology is only designed to limit the injury to 1/8 of an inch for blade contact accidents that

occur at a feed rate of 12 inches per second or less. At feed rates above that, SawStop technology can not stop or retract the blade before a significant injury, and perhaps even an amputation, could occur. Thus, injuries occurring as a result of kickbacks<sup>17</sup> or falling into the blade will not be prevented by the proposal. Even Petitioners admit that the proposed SawStop technology will not prevent serious injury in a kickback accident scenario. In particular, Petitioners acknowledge on Page 4 of their Petition that, during kickback, the blade “propels the work piece back toward the user at a high velocity. When this happens, the user’s hand may be carried into the blade because of the sudden and unexpected movement of the work piece.” In fact, testing by our members indicates that when an injury occurs due to a kickback, the approach velocity of the hand can be as high as 200 inches per second. Likewise, when accidents occur from slipping or reaching over the saw, the approach velocity can be as high as 40 to 60 inches per second. Significantly, of the 70% of the 692 injury reports involving a blade contact injury, approximately 20% involved a scenario where the user was injured in the course of a kickback.

Thus, the NEISS data shows that, at most, only slightly more than 50% of accidents involved non-kickback blade contact injuries. Of that amount, a large percentage were not serious injuries and many likely occurred under scenarios where the feed rate was more than 12” per second. In the final analysis, the data shows that a significant percentage of known table saw injuries will not be lessened or prevented by the proposed technology.<sup>18</sup> Indeed, at a feed rate of

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<sup>17</sup> Kickback is a phenomenon where the work piece, due to friction with the blade, is propelled by the blade at very high speed. Injury can occur in this situation under a number of circumstances, one of which is having the user’s hand carried into the blade by the work piece at high rates of speed.

<sup>18</sup> An analysis of the 713 reports of injury submitted to our members, however, reveals a similar breakdown of injury scenarios as seen in the 692 claims in the NEISS database. Only 32% of the reported claims and injuries occurred when the user was feeding the work piece and contacted the blade and, thus, arguably could have been lessened or prevented by the proposed technology. Twenty three percent occurred when the user’s hand was propelled into the blade as a result of a kickback and 20% occurred when the user was hit by material thrown from the table saw. The remainder occurred under scenarios that did not involve contact with the blade at all. CPSC data from 1976 reveals similar ratios. In particular, 1976 CPSC data suggests that kickback occurs in 24% of table saw incidents and stock binding (an event that can create an effect comparable to a kickback), occurs in 11% of table saw incidents.



200 inches per second during a kickback, a user could easily amputate multiple fingers even if SawStop operates according to its design. Even the SawStop marketing literature states that, “[t]he contact detection system works to minimize injury. The severity of an injury will depend on the speed at which you contact the blade. You may incur serious injury on a SawStop saw”.<sup>19</sup>

Furthermore, the SawStop technology can not be retrofitted. Thus, the benefit, even for those blade contact injuries that occur with a relatively slow feed rate as defined in the Petition, will not be seen for years. The table saws in use today will continue to remain in use for a number of years to come.

In addition to the fact that the proposed technology will not prevent or lessen many table saw injuries, table saws are relatively safe and have been getting safer to use as a result of industry efforts. In fact, while the actual number of table saw injuries per year has remained fairly consistent (and even declined) over the past ten years and has actually declined over the past twenty years,<sup>20</sup> the accident rate has decreased dramatically.

Total shipments of table saws for 2002 reported by PTI members were approximately 725,000 units. These figures account for approximately 95% of U.S. table saw sales. Over the last ten years, the number of table saws sold annually has continued to increase. We estimate there are approximately 6 million table saws currently in use in the United States. Although not scientifically qualifiable, the industry estimates that the average life expectancy of a table saw, given the broad range of table saw models, is approximately ten years. Thus, with the growth in sales and the build up of table saws in the market, the population of table saws in use also continues to grow to the point where the population of table saws in use in the United States has

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<sup>19</sup> See copy of SawStop Price List and Pre-Order Form attached as Exhibit D.

<sup>20</sup> In 1980, the Commission staff estimated, based on NEISS data, approximately 38,000 emergency room visits as a result of table saw incidents. In 1992, the Commission staff estimated, based on NEISS data, approximately 34,461 emergency room visits as a result of table saw incidents.

more than doubled over the last 10 years. If the number of accidents is considered relative to the number of units sold per year, the accident rate, therefore, has been more than cut in half. Even if one accepts the NEISS data and assumes there is an average of 30,000 table saw related accidents per year, and one looks to the low end of the table saw population estimated to be 6 million table saws in use, the accident rate throughout the life of the table saw is one half of one percent. To take this one step further, if one assumes that each table saw is used to make only 300 cuts per year, an assumption that is extremely conservative, there are 1.8 billion (1,800,000,000) cuts being made with table saws every year. If every cut made is a chance for injury and there are over 1.8 billion cuts made per year, the accident rate is negligible.

On a related matter, the Petitioners state that the average cost per serious injury could easily exceed \$5,000 to \$10,000 per injury, with the cumulative cost of 30,000 injuries being \$150 to \$300 million per year. First, the estimate of \$5,000 to \$10,000 per injury is unsubstantiated. In addition, even if one assumes that the numbers are correct, the above discussion demonstrates that the implementation of SawStop technology, assuming it could be implemented on a mass produced product, would only lessen the severity of injury in a relatively small percentage of accidents. Furthermore, we believe that the power tool industry is aware of the most serious injuries associated with table saws and our data suggests that the average cost per accident is closer to \$1,000 to \$2,500. In support of this, the NEISS data shows that over 90% of users injured on table saws are treated and released without any hospitalization. Thus, Petitioners' suggestion concerning the monetary benefit to the SawStop technology is grossly overstated.

As a final matter concerning the benefits of the SawStop technology, the Petitioners do not dispute that the proposed braking device would have to be deactivated for any cutting

operation involving metal. It is not uncommon for table saws to be used for metal cutting. There are also cutting operations where the braking system simply will not work. For example, due to the configuration of a molding cutter blade, the proposed braking system would not be effective to stop the blade in the event of skin contact. As such, the user likely would elect to deactivate the SawStop system for this operation as well. Presumably, deactivation of the system would be accomplished by a bypass switch that would be utilized by the table saw user. In other words, the user could voluntarily elect to override the system any time the user chose to do so. In this fashion, the system could easily be defeated. One of the hallmarks of a good safety system is that it is not easily defeated by the user. Here, the user could easily defeat the proposed braking device by the simple flip of a switch.

In sum, the benefits of implementing the SawStop technology are marginal, at best. As a threshold matter, table saws have a relatively low accident rate and are relatively safe. Implementation of the proposed technology only has the potential to prevent or lessen less than half of the relatively small number of serious accidents that occur on table saws. Finally, to the extent there is a marginal benefit to the proposed technology, the benefit is further diminished because any such benefit will not be seen for many years to come, and the technology can be easily overridden by the user.

C. **Costs to Consumers and Manufacturers to Implement the Proposed Technology are Monumental and New Safety Hazards are Generated.**

Although PTI acknowledges that the SawStop technology proposed in the Petition conceivably could, if ever developed to work reliably on a mass produced product, reduce the severity of an injury in a limited number of accident scenarios (i.e. when blade contact occurs from feeding the wood at a relatively slow feed rate), the relative costs of developing the

technology and ultimately implementing it far outweigh any benefit. The costs to consumers and manufacturers are multi-faceted. In addition, requiring manufacturers to implement the technology will result in additional safety hazards not seen with the current design.

Perhaps the largest component of the additional costs lies in the fact that the SawStop technology does not lend itself to fabrication of a universal "bolt on" part that all table saw manufacturers can retrofit to existing saws. Rather, each manufacturer would have to redesign all table saw models in its line which, in turn, would require significant research, development, and retooling costs. In short, granting the Petition will mandate that each manufacturer create an entirely new design of each table saw in its line, which would be a dramatic change in the industry. Our members estimate that just the cost of redesign, retooling, testing, and regulatory approvals will be between two and ten million dollars per company, based on the number of models each company will have to redesign. This does not include the initial research and development required to determine whether the proposed technology could ever be used reliably and effectively on a mass-produced product.

This is not the end of the cost equation. In addition to design, development and retooling costs, which obviously will have to be passed onto consumers, there are additional costs associated with the hardware that will have to be added to each table saw to incorporate the SawStop technology. Although Petitioners give a blanket estimate of 25% of the total cost, which includes their 8% royalty, the reality is that the percentage increase likely will be much higher, particularly on the lower priced units. Table saws range in price from \$99.00 to over \$2,500.00. Generally, consumer model table saws will range from \$100.00 to \$800.00, while the industrial products range from \$500.00 to over \$2,500.00. Because the cost to add the technology is a relatively fixed cost and because there is such a broad range in the cost of table saws, it is not

accurate to look upon the added cost in terms of a percentage of total cost. Even Mr. Gass has estimated in other publications, including on his website, that the cost to add the SawStop technology to an existing table saw could be as high as \$150.00 per unit. Our members believe the number could be even higher, particularly given that a "final design" has not been developed. In the context of the lower priced consumer saws, which sell for as low as \$100.00, the addition of the SawStop technology will, using Petitioners' numbers, more than double the price. If you add the replacement costs of the braking cartridge once the system triggers, you may actually exceed the original cost of the saw by a factor of two. Certainly, this would effectively eliminate the lower priced units from the market. In the event these lower priced units are eliminated from the market, many consumers will turn to less safe methods of performing cutting operations typically performed by these lower cost table saws. For example, consumers could return to the practice of attempting to jury rig portable circular saws on various benches in an effort to perform ripping and cross cutting operations.<sup>21</sup> . Certainly, this could result in a significantly increased safety hazard.

An additional cost factor concerns the braking cartridge itself. Although a cartridge would be included with the initial purchase of the saw, a user would be required to purchase additional models of cartridges for dado cutting and cutting with different sized blades. The braking cartridge either has to be changed or adjusted to accommodate different diameter blades or different thicknesses of blades. The cost for these additional cartridges could range from \$59 to \$69 according to Petitioners. Moreover, in the event of a false trip, which our members' testing demonstrates has a high likelihood of occurring, the user will have to incur the cost and

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<sup>21</sup> During the 1970's and 1980's, PTI members were made aware of many accidents involving portable circular saws attached to tables or plywood sheets. With the rising popularity of inexpensive consumer model table saws during the 1990's, these types of accidents have almost entirely been eliminated.