National Consumers League * Consumer Reports * Consumer Federation of America
Public Citizen * US PIRG * R. David Pittle, Ph.D.

COMMENTS TO THE U.S. CONSUMER PRODUCT SAFETY COMMISSION

TABLE SAW BLADE-CONTACT INJURIES
SPECIAL STUDY REPORT 2017
[Docket No. CPSC-2011-0074]

February 4, 2019

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The National Consumers League, Consumer Reports, the Consumer Federation of America, Public Citizen, US PIRG, and R. David Pittle, Ph.D., welcome the opportunity to comment on the report by U.S. Consumer Product Safety Commission (CPSC) staff titled, *Table Saw Blade-Contact Injuries Special Study Report, 2017* (2017 Special Study or Special Study).[1]

We have been advocating for the improvement of the safety of table saws for more than a decade. We applauded the CPSC's decision to publish a Notice of Proposed Rulemaking (NPR)[2] in 2017 to advance the safety of these products. We believed then—and still believe now—that the Commission's proposed performance requirements will produce inherently safer saws, such as those that currently employ an Active Injury Mitigation (AIM)[3] system.[4] This would be a dramatic safety improvement in a product market that is filled with unreasonably hazardous products that are involved in tens of thousands of injuries every year.

As part of its decision on April 27, 2017, the Commission directed agency staff to complete and publish for comment a Special Study regarding the type of table saws (bench, contractor, or cabinet) that produce injuries identified in the National Electronic Injury Surveillance System

[1] CPSC staff briefing package, *The 2017 NEISS Table Saw Special Study* (Nov. 13, 2018) (online at www.cpsc.gov) at PDF p. 6 et seq ("2017 Special Study").
[2] 82 *Federal Register* 22190 (May 12, 2017)("2017 NPR").
[3] AIM technology operates by triggering a virtually instantaneous hazard mitigation system that protects the user when a blade first comes in contact with the user's skin. Table saws with an AIM-based design have been shown to eliminate or dramatically reduce the number and/or severity of injuries that continue to occur unabated on other table saws. Unfortunately, the vast majority of all new table saws today are presented for sale without an AIM-based design. Such saws do not provide effective protection to the user in the event of a sudden, unpredictable, hazardous situation, or even a simple mistake by the operator.
[4] See, e.g., Joint consumer group comments to CPSC on proposed table saw safety standard (July 26, 2017) (online at www.regulations.gov/document?D=CPSC-2011-0074-1289).

(NEISS).[5] On December 4, 2018, the agency sought public comment on the Special Study, which evaluated table saw injuries that occurred in 2017.[6]

With one glaring exception, we believe the overall results in the Special Study reinforce key findings of the Commission's NPR and, thus, further support its proposal for a mandatory safety standard requiring safer performance of all three types of saws.

One aspect of the study—the claim that the relative-risk ratio associated with table saws with Modular Blade Guards (MBGs) is only 1/7th the risk of table saws with Traditional Blade Guards (TBGs)—defies common sense and is flatly refuted by other more reliable data. Were this claim accurate, it would be reasonable to expect the number of injuries to have dropped substantially between 2010 and 2017. Instead, the number of injuries remained virtually the same. This claim should be rejected outright.

First, we highlight several of the findings that reinforce the Commission's 2017 NPR.

A. The 2017 Special Study Demonstrates and Reinforces the Ongoing Need to Regulate All Types of Table Saws

As noted in the introduction to the 2017 Special Study, the CPSC staff set out to determine how the different types of table saws are associated with blade-contact injuries. According to the results of the Special Study, the estimated risk from the various types of table saws were found to be as follows:[7]

- Bench saws: 40.11 blade-contact injuries per 10,000 bench saws in use;
- Contractor saws: 50.19 blade-contact injuries per 10,000 contractor saws in use; and,
- Cabinet saws: 16.91 blade-contact injuries per 10,000 cabinet saws in use.

The study also confirmed several key elements of the injury pattern that served as the underpinning of the Commission's 2017 NPR. Specifically:

- The 2017 Special Study estimated that there were 26,500 blade-contact injuries treated in hospital emergency departments.[8] This result confirms the 2017 NPR's finding that table saws present consumers and other saw users with an unreasonable risk of injury.

[5] This data covers only those injuries treated in hospital emergency departments. Our comments are similarly focused.
[6] 83 *Federal Register* 62561 (December 4, 2018). "Notice of Availability: Table Saw Blade-Contact Injuries Special Study Report, 2017.
[7] 2017 Special Study at 6.
[8] Id. at 5.

- The 2017 Special Study estimated that the blade guard was not in use during 23,600 of the injuries (89%),[9] which reinforces the historical recognition that blade guards have not always been a desirable feature for table saw operators. For example, blade guards can adversely affect the utility of the saw,[10] which can hamper guard usage.

- A special finding regarding certain injuries experienced by saw users is covered in more detail in section **B.**

B. Table Saws Present an Even Greater Risk of Injury Than Previously Assumed

The statistics from the 2017 Special Study provide a vivid picture that table saws without the built-in protections of systems like AIM continue to present an unreasonable risk of injury to the user. The description of table saw blade-contact injuries presented by Dr. Jason Goldsmith in the 2017 Special Study is particularly helpful to understanding more fully the severe physical and psychological trauma associated with table saw injuries.[11] Dr. Goldsmith's analysis reveals how the current NEISS system underreports the severity of certain table saw injuries. He points out that injuries reported in NEISS as "lacerations," which can connote any injury with a break in the skin, often mask a far more serious injury-outcome than a simple cut:

> Unfortunately, many who are injured by a table saw blade will suffer far worse than just a break in the skin. Such more severe wounds can involve all layers of the skin and damage to the underlying structures, and require extensive, long-term, complicated wound management, including multiple surgeries, long recuperation times, and the need for physical rehabilitation. Furthermore, these wounds and their treatment may be extremely painful, and may leave the victim badly scarred, disfigured, functionally impaired, and psychologically traumatized.[12]

Given the limits of the "laceration" diagnosis, the Special Study Review Team concluded, among other things, that many injury reports "inaccurately conveyed the true extent of the injuries received."[13] Accordingly, the CPSC staff decided that it had to augment the list of injury diagnoses to account for what has often represented underreporting of the severity of such injuries. Specifically, the agency's staff added a new injury diagnosis—"severe laceration"—to better illustrate and quantify the more serious nature of the injury.[14]

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[9] Id. at 17.
[10] Id. at 29.
[11] Id. at 61-88.
[12] Id. at 69.
[13] Id. at 79.
[14] Id. at 80.

This result of the Special Study illustrates the gruesome nature of the risk associated with the vast majority of the table saws currently on the market. And because the benefits to table saw users associated with avoiding these more serious injuries are higher, the Commission's cost-benefit ratio as published in its 2017 NPR would be even more favorable to Commission action when recalculated using this new list of injury diagnoses. Simply stated, the benefit of avoiding the costs of a "severe laceration" is far greater than avoiding a "simple laceration."

Thus, in our view, the analytical results of the 2017 Special Study as highlighted in sections **A.** and **B.** above demonstrate that all three types of table saws are unreasonably hazardous; that the injuries can be horrific; and that regulatory measures are needed to reduce those risks.

C. The Tentative Conclusion That Table Saws with Traditional Blade Guards (TBGs) are Seven Times More Risky Than Those with Modular Blade Guards (MBGs) Is Contradicted by More Reliable Data and Should Be Rejected

Based on the Special Study's estimate that in 2017 there were 26,500 table saw blade-contact injuries treated in emergency departments,[15] the CPSC staff estimated that the risk of blade-contact injuries from saws with MBGs was 8.19 per 10,000 saws available for use, and estimated that the risk of blade-contact injury for table saws equipped with TBGs was 60.76 per 10,000 saws available for use.[16] Using these estimates, the staff concluded:

> In 2017, the estimated relative risk of a blade-contact injury is 7.19 times more on a saw with a traditional blade guard than on saw with a modular blade guard.[17]

For the reasons stated below, we believe this conclusion is totally incorrect and should be rejected.

C.1 CPSC's 2017 Notice of Proposed Rulemaking (NPR) Contradicts the Agency Staff's Conclusion in the 2017 Special Study Regarding the Relative Risks Associated with MBG Saws Versus TBG Saws.

Before looking to the 2017 Special Study, one should review the carefully documented findings in the Commission's 2017 NPR for table saws. In the NPR, the agency's staff concluded that during the period (2010-2015), no change in table saw injuries occurred after the introduction of riving knives and Modular Blade Guards as required in the industry's voluntary standard, UL 987 (7th edition). Stated more specifically,

[15] Id. at 5
[16] Id. at 6
[17] Id. at 6.

> [T]here is no discernible change in the number of blade-contact injuries or types of injuries related to table saw blade contact from the time span before the voluntary standard was implemented (2004-2009) to the time span after the implementation of the voluntary standard requiring the riving knife and modular blade guard on all table saws (2010-2015).[18]

Moreover, the 2017 NPR also states for the period covered by (2010-2015),

> [C]PSC staff's analysis shows that the addition of the riving knife and modular blade guard in the voluntary standard has not reduced the number or severity of blade-contact injuries.[19]

Notwithstanding these findings in the 2017 NPR, the CPSC staff reached a dramatically different conclusion in the 2017 Special Study. To say that the real-world implications of these two different findings contradict each other is an understatement—it defies credulity and common sense. For example, to find no discernible change in the numbers of table saw blade-contact injuries over the period covered from, say, 2010-2015, resulting from the voluntary standard requiring MBGs on new saws, but then to find during 2017 that saws conforming to the voluntary standard suddenly reduced the risk level to 1/7th of those with TBGs makes no sense on its face. As we will show in sections **C.2** and **C.3**, this assertion should be rejected outright and withdrawn.

C.2 CPSC's NEISS Estimates for Injury Data Contradict the Staff's Conclusion Regarding the Relative Risk of Those Table Saws with an MBG Versus Those with a TBG.

In the 2017 Special Study, the agency's staff based its analysis of the relative risk between table saws equipped with an MBG versus those equipped with a TBG on five estimates: [20]

1. Information on the estimated number of blade-contact injuries treated in U.S. hospital emergency departments during 2017 (26,500);
2. Estimates from the Special Study of the number of table saws available for use during 2017 (6.86-million);

[18] 2017 NPR at 22198. It is important to note that the estimates for blade-contact injuries per 10,000 table saws in use during (2010-2015) were in agreement with the estimate calculated in the Special Study for 2017 injury data (38.6 per 10,000 table saws in use). Id. at 22200 (Table 6).
[19] Id. at 22198.
[20] 2017 Special Study, Memo from Directorate for Economic Analysis (November 13, 2018), at 94.

3. Estimates from the Special Study of the proportion of table saws available for use during 2017 that came with MBGs (57.4%);

4. Estimated risk for blade-contact injuries for table saws with am MBG, which was 8.19 per 10,000 saws available for use; and

5. Estimated risk for blade-contact injuries for table saws with a TBG, which wass 60.76 per 10,000 saws available for use.

Using these estimates, the staff concluded that table saws with an MBG presented a risk that was 1/7th the risk associated with table saws with a TBG.[21]

One can see immediately the major flaw in this conclusion: If 57% of the table saws available for use in 2017 were equipped with an MBG and each one presented 1/7th the risk of table saws with TBG, one would expect to see an **obvious and major reduction in injuries in the NEISS data**[22] during 2017 as compared to, say, 2010, when MBG saws were a small part of the saw population. But no such reduction in injuries has occurred. Consider these facts:

Using the NEISS product code for "bench or table saws" (0841) (commonly referred to as simply "table saws"), the following estimates for table saw injuries apply:[23]

2010 – 32,669 table saw injuries
2011 – 32,251 table saw injuries
2012 – 32,745 table saw injuries
2013 – 32,657 table saw injuries
2014 – 33,475 table saw injuries
2015 – 33,983 table saw injuries
2016 – 33,164 table saw injuries
2017 – 32,804 table saw injuries

[21] Id. at 94. Staff derived this risk estimate ratio by dividing the estimated risk for table saws with a TBG (6,075/million saws with TBG) by the estimated risk of table saws with an MBG (819/million saws with MBG). This produced a relative risk estimate for saws with a TBG that was more than seven times as large as that for saws with an MBG.

[22] The staff's "relative risk" analysis was based on their analysis of blade-contact injuries for 2017. For purposes of assessing the plausibility of their "relative risk" conclusion, we have used the NEISS estimates of total injuries for the years 2010 through 2017. These estimates are closely correlated numerically to blade-contact injuries as calculated by the staff; they are highly reliable for year-to-year comparisons; and, most importantly, they are available for each of the years being discussed, while blade-contact computations are not. Conceptually, the result would be the same.

[23] Consumer Product Safety Commission. National Electronic Injury Surveillance System 1998-2017 on NEISS Online Database, released April, 2018.

As can be seen, not only is there no dramatic reduction in injuries comparing estimates for 2010 and 2017, no discernible injury reduction has occurred during any year listed, even as the industry was steadily increasing the percentage of table saws available for use with MBGs. It is particularly telling that the NEISS injury estimates for 2010 and 2017 are virtually the same. Thus, CPSC's NEISS data flatly contradict the staff's tentative finding about the relative risks associated with products that have MBGs and TBGs.[24]

Again, this finding should be rejected and withdrawn completely.

C.3 The Discrepancy Between the Claimed Risk Ratio and NEISS Injury Estimates is Large

The implications of the claimed relative risk ratio of 1/7 are enormous. Let us *pretend* for a moment that the relative risk ratio really is 1/7 and see how that would manifest in the real world.[25] Again, we take as given:

- In 2010, the saws in use were predominately saws with TBGs.
- In 2017, 6.86 million table saws were available for use.
- In 2017, 57% of the table saws available for use came with MBGs.
- For the year 2017, the NEISS injury estimate was 32,804 injuries.

To quote from the 2017 NPR,

> If the voluntary standard was having an impact on the number or severity of injuries, there would be a steady decrease in the number of injuries or severity of injuries as the proportion of table saws compliant with the new standard increases.[26]

If the new MBG saws truly presented only 1/7th the risk of an old-style TBG saw, we would expect only 1/7th of the injuries when compared to a similar population of TBG saws.

We know that the population of MBG saws in 2010 was small, and the population of MBG saws was 57% of the total saws available for use in 2017.

[24] An alternative explanation might be that the NEISS data are defective. We reject such a notion. The NEISS database has been refined and improved continuously ever since the CPSC opened its doors some 45 years ago. In our experience, it is an established, robust database that has earned respect from the public as a reliable data source for making year-to-year comparisons as well as valid estimates of specific product-related injuries.
[25] While we have already seen that there has been no decrease in total injuries estimated by NEISS, it is nonetheless instructive to see just how much improvement we should expect if the risk of the saws with MBG actually was 1/7th that of saws with the TBG.
[26] 2017 NPR at 22198.

We also know that the NEISS injuries for 2010 totaled 32,669; for 2017 the number was 32,804.

When a large portion of TBG saws is replaced over time by MBG saws, it reasonable to expect a reduced number of injuries from that population of supposedly safer saws—in this case, there should be only 1/7th of the injuries from the 57% of saws with an MBG. Using 2017 NEISS data, we can calculate the "new" number of injuries as

(1/7) x (0.57) x (32,804) = 2,671 injuries that would occur with MBG saws

Had this population of MBG saws still been TBG saws, they would not have had any extra injury-reducing properties. The injuries from this group of saws would have been

(0.57) x (32,804) = 18,698 injuries

Conceptually, the injuries that would have been saved as a result of the saws with an injury rate of 1/7th of its predecessors is the difference

18,698 – 2,671 = 16,027 injuries saved

Given the size of this "theoretical" injury reduction, surely it or a large part of it would have been obvious in the NEISS data between 2010 and 2017—but no such reduction was observed. Indeed, as we have shown earlier, the NEISS injuries have remained virtually the same for each year in the period 2010-2017—during which the industry steadily increased the population of table saws with MBGs from a small percentage in 2010 to 57% in 2017.[27]

The inescapable conclusion is that an observable reduction of injuries did not show up because the claim that saws sold with MBGs present 1/7th of the risk of saws with TBGs is incorrect.

The enormous discrepancy between the injuries that would be predicted based on the estimates of the relative risks of MBG versus TBG and the actual NEISS injury data for 2010 through 2017 directly contradicts the relative-risk assertion expressed in the 2017 Special Study. Without studying the underlying raw data used in the published study, it is impossible to say where the analysis could have gone awry—but it seems quite clear that at least one, if not both, of the estimates of injury rates for saws with an MBG and those with a TBG is wrong. Therefore, the relative–risk ratio should be rejected outright lest it contaminate and mislead the ongoing debate on how to reduce the unreasonable risks inherent in table saws on the market today.

[27] There has not been a significant shift in the number of table saws sold year-to-year from 2010-2017. See 2017 Special Study, at 90 (Table 1. Annual Table Saw Sales by Type).

SUMMARY

Notwithstanding the serious weaknesses in the relative risk sections, the other findings of the Special Study are strong and compelling. The injury analyses clearly reinforce the Commission's 2017 NPR and further demonstrate that the CPSC should quickly move to publish as a final rule performance requirements for safety systems like AIM to be part of all new table saws.

AIM technology is a critically-needed solution to a longstanding injury problem—it has proven itself in the field as being effective at protecting table saw users from horrific blade-contact injuries; its cost is reasonable, as established in the 2017 NPR; and it is available for use in today's saws. The cost-benefit analysis published in the Commission's 2017 NPR is very strong and makes the economic case supporting a mandatory rule abundantly clear.

Finally, the voluntary standards process led by Underwriters Laboratories (UL), after an intense effort lasting more than four years (2011-2016),[28] failed to move the industry to adopt general requirements similar in performance to AIM technology. Most of the industry had already chosen to adopt the use of MBGs—a feature shown by NEISS injury estimates to have had no observable impact on reducing injuries between 2010 and 2017. As a result, consumers continue to experience an undiminished incidence of injuries from these unreasonably hazardous products.

In summary, the unreasonable risk of injury to consumers from using table saws that do not meet the performance requirements specified in the 2017 NPR will persist in taking its toll unless and until the Commission takes decisive action to finalize its proposal. CPSC has both the statutory mandate and the authority to correct this gruesome pattern of injuries. It needs only the will to act.

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[28] 2017 NPR at 22205.

Respectfully submitted,

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[29] R. David Pittle served as a commissioner on the CPSC during 1973-82. He holds a Ph.D. in electric engineering, and was a consumer participant on two UL committees directed to develop an improved voluntary safety standard for table saws that would have included requirements for an AIM system. He currently serves on the Board of Directors of both the American National Standards Institute (ANSI) and Advocates for Highway and Auto Safety.