



**UNITED STATES
CONSUMER PRODUCT SAFETY COMMISSION
4330 EAST WEST HIGHWAY
BETHESDA, MD 20814**

This document has been electronically
approved and signed.

DATE: April 15, 2020

BALLOT VOTE SHEET

TO: The Commission
Alberta E. Mills, Secretary

THROUGH: John G. Mullan, General Counsel
Mary T. Boyle, Executive Director

FROM: Hyun S. Kim, Acting Assistant General Counsel, Regulatory Affairs
Meridith L. Kelsch, Attorney, Regulatory Affairs

SUBJECT: Petition to Amend Warning Label Requirements in 16 C.F.R. Part 1205, Safety Standard for Walk-Behind Power Lawn Mowers (CP 19-1)

BALLOT VOTE DUE: Tuesday, April 21, 2020

On February 19, 2019, the Outdoor Power Equipment Institute filed a petition requesting that the Commission initiate rulemaking under Sections 7 and 9 of the Consumer Product Safety Act (CPSA) to amend the warning label requirements in 16 C.F.R. part 1205, Safety Standard for Walk-Behind Power Lawn Mowers. The Office of the General Counsel docketed the request, and the Commission published notice of the petition in the *Federal Register* on April 9, 2019. In the attached briefing package, staff recommends that the Commission deny the petition.

Please indicate your vote on the following options:

- I. Grant the petition, and direct staff to initiate rulemaking.

(Signature)

(Date)

- II. Defer action on the petition.

(Signature)

(Date)

CPSC Hotline: 1-800-638-CPSC(2772) ★ CPSC's Web Site: <http://www.cpsc.gov>

III. Deny the petition, and direct staff to draft a letter of denial.

(Signature)

(Date)

IV. Take other action specified below.

(Signature)

(Date)

Attachment: *Staff Briefing Package: Petition for Revision of 16 C.F.R. Part 1205, Safety Standard for Walk-Behind Power Lawn Mowers*



Staff Briefing Package

Petition CP 19-01: Petition for Revision of 16 CFR Part
1205 – Safety Standard for Walk-Behind Power Lawn Mowers

April 15, 2020

For further information, contact:
Sharon White, Project Manager
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CPSC Hotline: 1-800-638-CPSC(2772) CPSC's Web Site: <http://www.cpsc.gov>

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ATTACHMENTS

- TAB A Memorandum from Angie Qin and John Topping, Division of Hazard Analysis, Directorate for Epidemiology, “Walk-Behind Power Lawn Mower-Related Deaths, Injuries, and Potential Injuries: January 2016 to October 2019,” dated, December 20, 2019.
- TAB B Memorandum from Stefanie Marques, Division of Pharmacology and Physiology Assessment, Directorate for Health Sciences, “Health Sciences Analysis of Blade Contact Injuries Associated with Walk-Behind Power Lawn Mowers, 2016–2019,” dated, December 5, 2019.
- TAB C Memorandum from Sharon R. White, Division of Human Factors, Directorate for Engineering Sciences, “Human Factors Analysis of Labeling for Walk-Behind Power Lawn Mowers, Petition CP 19-01,” dated December 26, 2019.

- TAB D Memorandum from Andrew Newens, Division of Mechanical Engineering and Combustion, Directorate for Engineering Sciences, “Assessment of Existing Standards and Regulations Related to Walk-Behind Power Lawn Mowers,” dated December 3, 2019.
- TAB E Memorandum from Troy Whitfield, Division of Regulatory Enforcement, Office of Compliance and Field Operations, “Requirements for Walk-Behind Power Lawn Mowers,” dated January 9, 2020.
- TAB F Memorandum from Susannah Proper, Directorate for Economic Analysis, “Market and Economic Considerations for Petition for Revision of 16 CFR Part 1205—Safety Standard for Walk-Behind Power Lawn Mowers,” dated November 26, 2019.
- TAB G Memorandum from Sharon White, Division of Human Factors, Directorate for Engineering Sciences, “Public Comments,” dated November 21, 2019.

Executive Summary

On February 19, 2019, the Outdoor Power Equipment Industry (OPEI) petitioned the U.S. Consumer Product Safety Commission (CPSC or Commission) to revise the labeling requirements of the mandatory standard at 16 CFR part 1205, *Safety Standard for Walk-Behind Power Lawn Mowers*, to allow manufacturers the option of using a pictorial-only warning to communicate the blade-contact hazard. OPEI asserts that using a pictorial-only warning is needed to communicate the warning to consumers who do not read English and who may lack literacy skills.

The petitioner also asserts that the proposed warning will allow manufacturers to harmonize the label globally. According to the petitioner, the proposed warning addresses the same hazard of blade-contact injury to hands and feet as the Commission-required warning. Moreover, the petitioner contends, the proposed warning is an enhancement because it depicts potential injuries to both hands and feet, where the injury potentially occurs.

OPEI maintains that the petition seeks a limited, non-material change to the CPSC standard, because it requests a revision to allow the option of using a pictorial-only warning, and it will leave the standard otherwise unchanged. Staff assessed the petitioner's pictorial-only warning as an option to the CPSC's existing warning label.

The *Safety Standard for Walk-Behind Power Lawn Mowers* includes requirements for warning labels in § 1205.6. The required and proposed warning label are intended to address the risk of blade-contact injury by conveying a safety message to consumers to keep hands and feet away from the blade.

Staff believes that the CPSC's warning label, which contains both text and a pictorial, is likely to be more effective because it contains attention-getting characteristics, is easy to read and understand, and contains motivational content. The labeling research shows that these factors are necessary to induce behavioral change. In contrast, staff asserts, OPEI's pictorial-only warning is likely to be less effective because the pictorial-only warning is unclear and lacks motivational content. Furthermore, staff asserts that, even if the proposed label was considered to be effective, staff does not have information that demonstrates that a pictorial-only warning is necessary.

If the Commission grants the petition to commence a rulemaking to allow the use of OPEI's pictorial-only warning, staff concludes that manufacturers would be using a warning label that is likely to be less effective than CPSC's warning label. The Commission could instead grant the petition to commence rulemaking to develop a different pictorial-only warning. However, staff does not have information that would suggest that any pictorial-only warning is necessary as an option to the CPSC warning label. Furthermore, it would require significant staff resources to develop and test pictorials. Staff's review of the data shows that the standard is effective because there has been a reduction in injuries since the standard was promulgated. For these reasons, staff recommends that the Commission deny the petition.



**UNITED STATES
CONSUMER PRODUCT SAFETY COMMISSION
4330 EAST WEST HIGHWAY
BETHESDA, MARYLAND 20814**

Memorandum

Date: April 15, 2020

TO: The Commission
Alberta E. Mills, Secretary

THROUGH: John G. Mullan, General Counsel
Mary T. Boyle, Executive Director

FROM: Duane Boniface, Assistant Executive Director
Office of Hazard Identification and Reduction
Sharon R. White, Project Manager
Directorate for Engineering Sciences

SUBJECT: Petition CP 19-01: Petition for Revision of 16 CFR Part
1205 - Safety Standard for Walk-Behind Power Lawn Mowers

CPSC staff prepared this briefing package in response to a petition from OPEI, requesting the Commission to initiate rulemaking to allow the option of using a pictorial-only warning on walk-behind power lawn mowers.

I. Introduction

Currently, the Commission regulates walk-behind power lawn mowers under the Consumer Product Safety Act (CPSA). The *Safety Standard for Walk-Behind Power Lawn Mowers* is set forth in 16 CFR part 1205. The standard includes labeling and performance requirements. The performance requirements apply to rotary mowers only and do not apply to reel-type mowers. However, the labeling requirements apply to both rotary and reel-type mowers. The CPSC warning label, currently required for both mower types, must contain both text and a pictorial. The CPSC warning label is intended to reduce the risk of injury to consumers' hands and feet caused by contact with the mower's rotating blade. § 1205.6.

CPSC Hotline: 1-800-638-CPSC(2772) CPSC's Web Site: <http://www.cpsc.gov>

A. Request for Petition

On February 19, 2019, OPEI petitioned the Commission to revise the labeling requirements of the mandatory standard.¹ Specifically, OPEI petitioned the Commission to revise 16 CFR § 1205.6 to allow the option of using an International Organization for Standardization (ISO)-approved pictorial-only warning (Figure 1), instead of using the CPSC-required warning label (Figure 2). On March 27, 2019, the CPSC's Office of the General Counsel docketed the request as petition CP 19-01.

OPEI states that using pictorial warnings is particularly effective because, in the United States alone, more than 300 languages are spoken, and across all global markets, a considerable number of consumers do not read any one language proficiently. The petitioner maintains that the proposed warning will communicate the warning effectively, regardless of a consumer's spoken language and degree of literacy. Additionally, the petitioner asserts, the proposed warning will allow global harmonization of the label for manufacturers. The petitioner states that the proposed warning addresses the same hazard of blade-contact injury to hands and feet as the Commission-required warning addresses. Additionally, the petitioner contends that the proposed warning is an enhancement because the pictorial-only warning depicts potential injuries to hands and feet, where that injury potentially occurs. OPEI states that the petition seeks a limited, non-material change to the CPSC standard because it requests a revision to the standard to allow the option of using the pictorial-only warning, leaving the standard otherwise unchanged. On April 9, 2019, the Commission published a *Federal Register* notice,² soliciting public comments on the petition. The CPSC received 11 comments, which we address in section G below.

B. Framework for Petitions

Under its petition regulations, in deciding whether to grant or deny a petition, the Commission considers several factors, including:

- Whether the product that is the subject of the petition presents an unreasonable risk of injury;

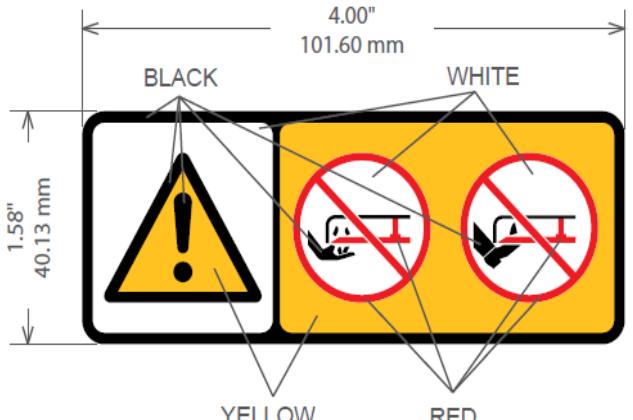


Figure 1



Figure 2

¹ <https://cpsc.gov/s3fs-public/Petition%20CP%2019-01%20Walk%20Behind%20Power%20Lawn%20Mowers.pdf?92wmf9ZD8XiUwXYlsivquqlr7DWOBRh7>

² <https://www.govinfo.gov/content/pkg/FR-2019-04-09/pdf/2019-06841.pdf>

- Whether a rule is reasonably necessary to eliminate or reduce the risk of injury; and
- Whether failure to initiate rulemaking would expose the petitioner or others to the risk of injury the petitioner alleges the product presents.

The agency's petition regulations also state that when addressing these factors, the Commission will consider the petition in relation to the agency's priorities, as stated in the CPSC's Policy on Establishing Priorities and the Commission's resources available for rulemaking. 16 CFR § 1051.9.

Currently, the Commission addresses the risk of injury associated with walk-behind power lawn mowers under 16 CFR part 1205. The issue presented by OPEI's petition is whether the Commission should amend the existing regulation to add OPEI's pictorial-only warning to CPSC's warning label as an option. The Commission could also consider amending the existing regulation to add a different pictorial-only warning. For the reasons discussed below, staff recommends that the Commission deny the petition, and staff does not recommend amending the regulation to add the petitioner's pictorial-only warning or a different pictorial-only warning as an option to CPSC's warning label.

II. Background

A. Past Commission Action

To provide some context for the petitioner's request, we discuss the background of the warning label requirement for walk-behind lawn mowers.

1. The Promulgation of the Standard

On August 15, 1973, OPEI petitioned the Commission to initiate rulemaking to develop a consumer product safety standard for lawn mowers. In response to the petition, on February 15, 1979, the Commission published a final consumer product safety standard to reduce the estimated 77,000 injuries that occurred yearly from contact with the lawn mower's rotating blade (16 CFR part 1205). The Commission mandated performance requirements including: (1) the presence of a blade control system, and (2) the foot probe test. The labeling requirements specified that walk-behind power lawn mowers must conspicuously display a label on the product. Specifically, the Commission required that the blade system must:

- prevent the blade from moving unless the operator actuates the control;
- require continuous contact with the control in order for the blade to continue to be driven; and
- stop the mower blade within 3 seconds after the operator's hands leave the normal operating position.

These requirements were designed to ensure that if the operator left the normal operating position, the blade would stop before the operator could contact the blade with his or her hands or feet.

To reduce the potential for foot injuries, the standard requires the areas of the mower that can be reached by the operator's feet, while he or she is holding the handle, to be constructed so that a specified probe that approximates the human foot cannot be brought into contact with the blade from these areas; the foot probe test is used to determine whether a mower meets this requirement.

The labeling requirements provide that rotary mowers are required to bear a specified warning label near the discharge chute, and reel-type mowers are required to bear the label as near as possible to the center of the cutting width. (See Figure 2). The location requirements are intended to ensure that users will see the label. The label is intended to warn of the danger presented by contact with the rotating blade.

Reel-type mowers did not need to meet the performance requirements of the standard because, at the time the standard was adopted, the available data did not show that the risk of injury associated with reel-type mowers demonstrated a need to meet such requirements. However, reel-type mowers were required to meet the same labeling requirements as required by 16 CFR § 1205.6.

2. Review of the standard

In 1992, CPSC staff collected injury data for walk-behind power mowers from 1983 through 1990, as part of the Commission's effort to measure the effectiveness of the mandatory standard to address blade contact injuries. CPSC staff prepared a report based on the data that staff collected over that 8-year period. Staff estimated 50,100 Emergency Department (ED)-treated injuries in 1983. That number was reduced to an estimated 31,800 ED-treated injuries in 1990. Staff concluded that over the 8-year period, the estimated injury rate for walk-behind mowers decreased significantly.³

In the early 2000s, the Commission developed a plan to perform a systematic review of its regulations in response to the Office of Management and Budget's recommendations. One of the regulations selected for review was the walk-behind power lawn mower standard. On January 28, 2004, the Commission published a *Federal Register* notice announcing the pilot rule review program.⁴ The Commission received two comments related to the labeling requirements for walk-behind power lawn mowers. After reviewing the regulation and comments, staff concluded that the walk-behind power lawn mower standard was very successful in reducing the likelihood of consumers coming in contact with the moving blade on rotary mowers and that the label was effective. Accordingly, staff advised the Commission that amending the walk-behind power mower rule was unnecessary.⁵ Therefore, the Commission voted against revising the label.

³ CPSC, Directorate for Epidemiology, Division of Hazard Analysis, Estimates for Power Mower Related Injuries 1983-1990, Prowpitt Adler, March 1992.

⁴ <https://www.federalregister.gov/documents/2004/01/28/04-1744/pilot-program-for-systematic-review-of-commission-regulations-request-for-comments-and-information>

⁵ Briefing Package-Pilot Regulation Review Program, Jacqueline Elder, Assistant Executive Director, Office of Hazard Identification and Reduction, December 22, 2004.

III. Discussion

A. Injury Data

NEISS

The Division of Hazard Analysis (HA) staff reviewed the current injury data (TAB A). Staff found 366 in-scope cases in the National Electronic Injury Surveillance System (NEISS)⁶ for the period January 1, 2016 through December 31, 2018. Based on these cases, staff estimated a total of 18,500 ED-treated injuries for walk-behind power lawn mowers over this three-year period.

Reported Incidents

CPSC staff also received reports from the Consumer Product Safety Risk Management System (CPSRMS)⁷ indicating 234 walk-behind power lawn mower incidents or complaints for the period January 1, 2016 to October 31, 2019. No information was available in these reports regarding the ability of the consumer or mower operator to read instructions in English or other languages.

B. Health Sciences Analysis

Health Sciences (HS) staff analyzed blade-contact injuries (TAB B). According to staff's analysis, an estimated 2,200 injuries (12% of the estimated 18,500 ED-treated injuries) involved blade contact or potential blade contact.

Staff identified two hazard patterns for blade contact or potential blade contact injuries. One hazard pattern involves injuries sustained due to the consumer intentionally performing a task that the consumer erroneously believed would not bring their hand or foot into the path of the rotating blade. Examples of these incidents include cleaning yard debris near the base of the lawn mower or cleaning out the chute. Three percent⁸ of the estimated 18,500 ED-treated injuries due to blade-contact or potential blade-contact incidents reported fit this hazard pattern. Most of these incidents resulted in injuries to the user's hand, and a number of these incidents resulted in finger amputations. These are the type of injuries that the warning intends to address, as discussed in the Human Factors Analysis in TAB C.

The other hazard pattern involves injuries from contact with the blade when the user and/or the mower made sudden and unexpected movements (*e.g.*, user fell in front of the mower, user tripped and mower ran over toe). Five percent of the estimated 18,500 ED-treated injuries fit this hazard pattern. Most of these incidents resulted in injuries to the user's foot, and a number of

⁶NEISS injury data are gathered from emergency departments of hospitals selected as a probability sample of all U.S. hospitals with emergency departments. From this sample, CPSC staff produces nationwide estimates of product-related injuries. Additional information is provided in TAB A.

⁷CPSRMS is a database that includes in-depth-investigations, reported incidents, and other sources of injury data. The data is anecdotal and does not lend itself to a statistical inference. Additional information is provided in TAB A.

⁸The estimated number is below the reporting threshold. The reporting threshold is 1,200. Therefore, the estimated number is not reportable.

these injuries resulted in toe amputations. Staff could not determine the hazard pattern for the remaining blade contact incidents due to limited information in these cases.

HS staff also reviewed 234 walk-behind power lawn mower incidents or complaints reviewed by HA staff that involved blade contact. Of these incidents, staff determined that there were five injuries to the hand, foot, and leg sustained from blade contact. The two most severe injuries involved contact with the blade when the user and or the mower made a sudden and unexpected movement, such as a user's foot slipping under the mower.

C. Human Factors Analysis

Human Factor's staff assessment of relevant labeling issues is set forth in TAB C. CPSC staff's research on warning labels shows that for warnings to achieve the ultimate goal of inducing safety-related behavior, three factors must be met. These factors are: (1) noticing the warning, (2) processing the safety messages, and (3) motivating behavioral change.

CPSC's warning label meets all of these factors for inducing safety-related behavior. First, CPSC's warning label is noticeable. It is a large size, making it more visible, and the label has an atypical diamond shape, which increases its noticeability. Second, the label is easy to comprehend because it contains both text and a pictorial. Research shows that people know and understand words and syntax more universally than the elements of a pictorial. Although the available data do not specify whether the blade-contact incidents were due to the inability of consumers to read and understand the required English warning, staff concludes that the pictorial that accompanies the CPSC warning is clear and may communicate the warning to users who do not read English and who may lack literacy skills. Therefore, staff asserts that CPSC's warning may address the petition. Third, CPSC's warning label motivates consumers to keep their hands and feet away from the blades because the required warning has high shock value.

In contrast, staff concludes that OPEI's pictorial-only warning does not meet all the factors necessary for inducing safety-related behavior. Each of the three factors is discussed in turn.

Noticing the Warning. The pictorial-only warning is similar to the CPSC's warning label in terms of color scheme, border, and placement although it is smaller in size, is a typical rectangular shape, and lacks text. Although OPEI's pictorial-only warning may not be as conspicuous as the CPSC warning label, staff believes that users still would likely notice the warning.

Processing the Warning. Staff concludes, however, that consumers may not be able to process the pictorial-only warning. Specifically, consumers may not correctly interpret the meaning of OPEI's proposed pictorial-only label to make appropriate decisions regarding the hazard, how to avoid the hazard, and understand the consequences of ignoring the warning.

Although the petitioner states that the pictorial-only warning is approved by the ISO, OPEI did not provide any information to show that the warning was submitted to a comprehension test to determine whether consumers can correctly interpret its meaning. However, ESHF staff evaluated the pictorial-only warning and concluded that there may be confusion regarding what

the rectangular object represents, what section of the object is represented, and/or whether the hazard arises from a body part contacting the blade or getting stuck in the mower.

Also, OPEI stated that the pictorial-only warning would effectively communicate the subject warning to consumers, regardless of their spoken language or degree of literacy and harmonize the label globally. However, the available data do not specify whether the blade-contact incidents were due to the inability of consumers to read and understand the required English warning. Additionally, OPEI provided no data to demonstrate whether blade contact incidents occurred because victims failed to comprehend the English language. Moreover, the petitioner did not provide information that demonstrates that the pictorial that accompanies the CPSC warning is difficult to understand. Thus, staff cannot conclude that a pictorial-only warning is needed.

Motivating Behavioral Change. Finally, staff concludes that the proposed warning may not motivate behavioral change. Staff's research suggests that including information in a warning regarding the consequences of ignoring a warning may motivate consumers. Staff believes that OPEI's pictorial-only warning's depiction of the consequences of blade contact (*i.e.*, severed finger/foot/toe) does not have a high shock value because the depiction of the hand, foot, and blade is not as realistic in appearance compared to the hand and blade depicted in CPSC's warning label. Therefore, staff believes that CPSC's warning label is more likely to motivate behavioral change than OPEI's proposed pictorial-only warning.

Therefore, staff concludes that CPSC's warning label, which contains both text and a pictorial, is likely to be more effective in communicating the intended message and motivating behavioral change than OPEI's proposed pictorial-only warning.

A summary of CPSC's warning label and OPEI's pictorial-only warning label is provided in Table I below.

Table I.

Warning Label	Notice Warning	Easy to Process Warning	Motivate Behavioral Change
CPSC's Required Warning with text and pictorial	Yes	Yes	Yes
Petitioner's Proposed Pictorial-Only Warning	Yes	No	No

If the Commission grants the petition and commences a rulemaking, staff concludes that OPEI's pictorial-only warning is likely to be less effective than CPSC's warning label. Staff could consider the option of developing a different pictorial-only warning. However, as previously mentioned, the available data do not support the need for a pictorial-only warning.

Also, the petitioner did not provide any information to demonstrate the need for a pictorial-only warning. A new, pictorial-only warning also would require testing for comprehension before it is used as well as empirical studies to assess the effectiveness of the proposed warning, or any other warning, staff could develop. This undertaking would require significant staff resources to develop and test the comprehension and effectiveness of a pictorial-only label. Staff does not believe the data support such use of CPSC resources.

D. Mandatory, Voluntary, and International Standards

Staff reviewed three standards relevant to warning about blade contact with walk-behind power lawn mowers: the current mandatory standard, 16 CFR part 1205; ANSI/OPEI B71.1 voluntary safety standard; and ISO 5395 (TAB D).

The CPSC standard prescribes safety requirements for certain walk-behind power lawn mowers, including labeling and performance requirements intended to reduce the risk of injury primarily to the feet and hands of consumers caused by contact, with the rotating blade of the mower. The standard applies to mowers that have a certain cutting width, weight, and horsepower that distinguishes them from larger mowers, which are excluded from the standard.

The ANSI/OPEI B71.1 voluntary safety standard covers specifications for walk-behind and ride-on lawn mowers for personal use around homes, and it addresses general safety issues, such as operator controls, guards and shields, electrical components, and warnings. Mowers sold outside of the United States must meet the labeling requirements if sold in a country that requires compliance with ANSI B71.1. ANSI B71.1 allows manufacturers some latitude in selecting the method of warning users of the hazards involving these products, including options for text, pictorial-only warnings, or a combination of text and pictorial. However, the warning must conform to the requirements of ANSI Z535.4, ISO 11684, or 16 CFR § 1205.6. ISO 11684 includes the pictorial of the hands and feet contacting the blade, as depicted in the petitioner's proposed warning.

ISO 5395 is another voluntary standard that covers general safety issues, such as guards/enclosures, electrical components, and markings/warnings. Mowers sold outside of the United States must meet the labeling requirements if sold in a country that requires compliance with ISO 5395. The standard contains a requirement that all lawnmowers must address warning language, including the statement: "WARNING: KEEP HANDS AND FEET AWAY FROM THE BLADES!" However, the text can be replaced with safety signs in ISO 11684, which includes the pictorial components of the hands and feet, as in the petitioner's request.

E. Compliance Activities

Staff provided information on applicable laws and compliance activities associated with walk-behind power lawn mowers (TAB E).

In fiscal year 2017, the Office of Compliance and Field Operations (EXC) inspected 11 firms to determine industry's compliance with the walk-behind power lawn mower's regulations. All of the mowers staff inspected displayed the required warning label in the required location.

Between January 2014 and October 2019, Compliance staff reviewed recall data involving walk-behind mowers, and staff identified six recalls. None of the recalls involved mowers that failed to display a warning label.

Recently, Compliance staff investigated an import case in which walk-behind mowers were received at a U.S. port. Among other violations, the walk-behind mowers were missing the required warning label. EXC has had no other regulated cases in recent history related to the failure to use the required warning label.

F. Market Information and Economic Considerations

CPSC staff provided information on the market for walk-behind power mowers and the economic considerations related to the petition (TAB F). Staff estimates that the market size for walk-behind power mowers is approximately 5.5 million units sold per year. According to staff of CPSC's Directorate for Economic Analysis (EC), consumers can purchase walk-behind power mowers within the scope of the current regulation at mower dealerships, home improvement stores, general retail stores, hardware stores, and from internet retailers. Prices range from about \$100 for a small corded electric mower, to more than \$1,500 for a heavy-duty, gas-powered brush mower, with most priced from \$200 to \$600. The U.S. Census Economic Survey from 2017 estimates that 147 firms involved in lawn and garden tractor and home lawn and garden equipment manufacturing had a combined annual revenue of \$8.6222 billion. However, CPSC staff estimates 15 percent to 20 percent of those sales were for walk-behind power lawn mowers. About 36.3 million walk-behind power lawn mowers currently may be in residential use. The estimated expected useful life of a walk-behind lawn mower is 7 years.

If the Commission grants the petition and adopts the specific proposal set forth, the change could reduce the cost to manufacturers in two ways. First, it could reduce the cost of labeling the lawnmowers because the proposed pictorial-only warning would use the same color scheme as the currently required warning and the size of the proposed label is smaller, compared to the CPSC warning label. Second, the change could reduce the cost of maintaining multiple distribution channels for the North American market by allowing a label that may be accepted globally. Staff does not anticipate the requested action will have an adverse impact on small entities, due to reductions in labeling costs, and because no manufacturer or importer would be required to use the optional label instead of the CPSC's warning label.

G. Public Comments

On April 9, 2019, the Commission published a *Federal Register* notice, soliciting public comments on the petition. The comment period closed on June 10, 2019. The Commission received a total of 11 comments. Some commenters supported the claim that pictorial-only warnings may be more universally understood, and other commenters said they believe that a combination of text and pictorials are useful to ensure users understand the safety message. Staff's responses to comments relevant to the petition are provided at Tab G.

IV. Options

1. Grant the petition

If the Commission concludes that the available information indicates that a pictorial-only warning label is necessary to address the risk of blade contact injuries, the Commission may grant the petition. However, granting the petition does not mean that the Commission would necessarily issue a rule in the specific form requested in the petition. The Commission could also consider amending the existing regulation to add a different pictorial-only warning. However, the available data does not demonstrate that any pictorial-only warning is necessary. However, if the Commission grants the petition, testing for comprehension would be necessary as would empirical studies to assess the effectiveness of the proposed warning, or any other warning that staff could develop. Empirical studies would require significant staff resources to develop and test the comprehension and effectiveness of a pictorial-only label. Based on available information, staff, however, does not recommend that the Commission pursue additional information on this issue at this time.

If the Commission grants the petition, rulemaking requirements would depend on whether the amendment to the regulations involved a “material change.” If the amendment does not constitute a “material change” for purposes of section 9(h) of the CPSA, the Commission is not required to make the findings that are otherwise required for the amendment of a consumer product safety rule. The Office of General Counsel would assess this requirement if the Commission grants the petition and directs staff to commence rulemaking.

2. Deny the petition

If the Commission determines that the available information does not indicate that a pictorial-only warning is necessary, the Commission could deny the petition.

Staff concludes that the proposed pictorial-only warning is likely to be less effective than CPSC’s warning label. Therefore, staff does not recommend that the Commission proceed with a rulemaking.

3. Defer a decision on the petition

The Commission may defer a decision on the petition and direct the staff to obtain additional information, if the Commission concludes that more work would assist its decision of whether to grant or deny the petition. Staff has found no information to suggest that any pictorial-only warning is necessary as an option to the CPSC’s warning label. However, if directed to study pictorial-only warnings, staff believes that any new warning should be tested for comprehension before it is used. Staff would also recommend conducting empirical studies to assess the effectiveness of the proposed warning, or any other warning that staff could develop. Empirical studies would require significant staff resources to develop and test the comprehension and effectiveness of a pictorial-only label. Based on available information, staff, however, does not recommend that the Commission pursue additional information on this issue at this time.

V. Staff Conclusion and Recommendation

CPSC staff recommends that the Commission deny the petition. Staff concludes that the petitioner's proposed pictorial-only warning is likely to be less effective than the CPSC warning label containing both text and a pictorial. Additionally, the available data does not suggest the need for any pictorial-only warning as an alternative to CPSC's warning label. Although the data do not specify whether the blade-contact incidents were due to the inability of consumers to read and understand the required English warning, staff concludes that the pictorial that accompanies the CPSC warning is clear, and may communicate the warning to users who do not read English and who may lack literacy skills, and the petitioner did not provide information to demonstrate that the pictorial in the CPSC warning is not clear. Therefore, staff asserts that CPSC's warning may address the petition. Furthermore, staff's review of the data show the standard is effective and that revisions to the standard are not needed.

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**TAB A: Walk-Behind Power Lawn Mower-Related Deaths,
Injuries, and Potential Injuries: January 2016 to October
2019**



**UNITED STATES
CONSUMER PRODUCT SAFETY COMMISSION
4330 EAST WEST HIGHWAY
BETHESDA, MARYLAND 20814**

Memorandum

Date: December 20, 2019

TO: Sharon White
Project Manager
Division of Human Factors
Directorate for Engineering Sciences

THROUGH: Risana Chowdhury
Director, Division of Hazard Analysis
Directorate for Epidemiology

FROM: Angie Qin and John Topping
Division of Hazard Analysis
Directorate for Epidemiology

SUBJECT: Walk-Behind Power Lawn Mower-Related Deaths, Injuries, and Potential Injuries:
January 2016 to October 2019¹

I. Introduction

The Commission received a petition from the Outdoor Power Equipment Institute (OPEI) on February 19, 2019. The petition requested a limited revision to the warning label requirement for the Safety Standard for Walk-Behind Power Lawn Mowers - 16 CFR part 1205 (CPSC standard). Specifically, OPEI requests that the Commission amend the CPSC standard to allow for a pictorial-only warning as an alternative to the warning label. According to OPEI, “a pictorial-only warning will help provide consumers with understandable, non-language warnings to improve consumer safety and also modernize and globally harmonize the warning for all consumers.”

A “walk-behind power lawn mower” is defined in CPSC’s regulations as “a grass cutting machine either pushed or self-propelled, with a minimum cutting width of 12 inches that employs an engine or motor as a power source and is normally controlled by an operator walking

¹ This analysis was prepared by the CPSC staff. It has not been reviewed or approved by, and may not necessarily reflect the views of, the Commission. Not all of these incidents are addressable by an action the CPSC could take; however, it was not the purpose of this memorandum to evaluate the addressability of the incidents, but rather to quantify the number of fatalities, injuries, and other incidents reported to CPSC staff. If the date of incident is not reported, date of entry is used as a surrogate for the incident date.

behind the mower.” Mowers that have engines of 8 horsepower or more, weigh 200 lbs or more, and have a cutting width of 30 inches or greater are excluded from the standard.

CPSC staff reviewed data related to walk-behind power lawn mowers from the National Electronic Injury Surveillance System (NEISS) ranging from January 1, 2016 to December 31, 2018, and data from the Consumer Product Safety Risk Management System (CPSRMS) for incidents that occurred from January 1, 2016 to October 31, 2019 (and that were reported by November 1, 2019).

II. National Injury Estimates²

From January 1, 2016 to December 31, 2018, there were an estimated 18,500 emergency department-treated injuries associated with product code 1448, referencing walk-behind power lawn mowers (sample size=366, coefficient of variation=0.22). The 95 percent confidence interval (C.I.) for this estimate is 10,400-26,600. There was no statistically significant trend observed over the 3-year period (p-value=0.97).

No deaths were reported through NEISS. Most of the injuries (91%) were treated and released or examined and released without treatment. The most common injury types were strains/sprains (24%), various aches/pains (21%), lacerations (16%), contusions/abrasions (11%), and fractures (10%). The most frequently injured body parts were the lower trunk (12%), the finger (12%), and the upper trunk (10%).

Based on the narratives, scenario-specific details were rarely available. From the information available, the most common hazards were:

- Falls (16%) – cases involving falls: mostly unspecified falls, some cases stated that consumer fell on the lawnmower or fell into a hole on the ground
- Impact by projectiles (9%) – cases involving getting hit by projectiles, such as a rock, glass, debris, or unspecified object
- Blade involvement indicated (7%) – cases explicitly describing involvement of the “blade,” such as “lac wrist on lawn mower blade,” “leg caught by blade of lawn mower.”

² The source of the injury estimates is NEISS, a statistically valid injury surveillance system. NEISS injury data are gathered from emergency departments of hospitals selected as a probability sample of all U.S. hospitals with emergency departments. All data coded under product code 1448 was extracted. The data was reviewed by a multidisciplinary team of CPSC staff. Cases specifying riding mower or standing up mower were excluded. Cases involving product code 1401 (“Power lawn mowers, not specified”) and product code 1439 (“Lawn mowers, not specified”) were similarly excluded, even though some unknown proportion of these may have involved powered-walk behind lawn mowers. Given the very large number of injuries associated with the latter two product codes, the decision to include only the cases positively determined to involve powered walk-behind mowers likely yielded a very conservative injury estimate. However, not knowing the distribution of the injuries associated with the unspecified mower types, staff overall considered this decision prudent.

III. Incident Data³

CPSC staff received reports of 234 walk-behind power lawn mowers incidents or complaints that occurred from January 1, 2016 to October 31, 2019 (and were reported by November 1, 2019). This includes reports of one fatality, 14 injuries, and 219 incidents or complaints not indicating any injury. No information was collected regarding the ability of the consumer or mower operator to read instructions in English or other languages.

Of the incidents reported, 102 occurred in 2016, 60 occurred in 2017, 55 occurred in 2018, and 17 occurred in 2019. Trends should not be inferred from the data. Reporting is not complete for 2017-2019, and counts may increase as reporting continues (particularly for the more recent years). Of the 234 reported incidents, 170 did not specify age of any involved persons. From among the reports with age reported, with the exception of one 4-year-old boy, the reported ages ranged from 24 to 85 years old. Distributions are provided in the tables below detailing severity by incident year and age group, respectively:

**Table 1: Reported Powered Walk-Behind Mower Incidents by Year and Severity
January 1, 2016 through October 31, 2019**

Incident Year	Fatal	Injury	No injury reported	Total
2016	0	6	96	102
2017*	0	4	56	60
2018*	1	4	50	55
2019*	0	0	17	17
Total*	1	14	219	234

Source: Consumer Product Safety Risk Management System (CPSRMS).

Note: * indicates data collection is ongoing

**Table 2: Reported Powered Walk-Behind Mower Incidents by Age Group and Severity
January 1, 2016 through October 31, 2019**

Age Group (years)	Fatal	Injury	No injury reported	Total
Under 20	0	1	0	1
20-39	0	1	9	10
40-59	1	1	25	27
60-79	0	3	21	24
80-99	0	0	2	2
Not Reported	0	8	162	170
Total	1	14	219	234

Source: Consumer Product Safety Risk Management System (CPSRMS)

³ The CPSC database searched was CPSRMS. These reported deaths and incidents are not a complete count of all that occurred during this time period. However, they do provide a minimum number of deaths and incidents occurring during this time period and illustrate the circumstances involved in the incidents related to lawn mowers. All data coded under product code 1448 were extracted. The data were reviewed by a multidisciplinary team of CPSC staff. Cases specifying riding mower or standing up mower were excluded. Product code 1401 ("Power lawn mowers, not specified") and 1439 ("Lawn mowers, not specified") were considered and ultimately excluded due to the lack of information available from which to determine the mower type.

The observed hazard patterns among the 234 reported incidents can be ordered from the highest frequency to the lowest, as follows:

- **Fire Hazards** (excluding recall comments; including fire, smoke, overheating, fuel leakage): There were 102 (44% of 234) incidents in this category, including two injuries. Both injuries involve fires ignited near the muffler; however, one indicates fuel leakage, whereas the other makes no such observations. These two injuries and the other 100 incidents, where no injury was reported, are categorized into several subtypes below:
 - **Unexplained fire/smoke:** There were 53 (23% of 234) incidents in this category. This includes one injury (one of the two mentioned above), for which it was reported that a parked mower “caught fire from plastic directly over the muffler.” No other factors (i.e., fuel leakage or otherwise) were reported that might help explain the cause of ignition. First-aid was administered for the injury. Another 52 incidents did not report an injury and are also classified in this category due to the lack of additional information about why fire or smoke was observed.
 - **Gas leakage:** There were 35 (15% of 234) incidents related to gas leakage from a loose cap or gas tank crack. This category includes the other one of the two fire-related injuries. The injury report describing fuel leakage explains that gas leaked from a split in the tank onto a hot muffler before ignition. The consumer was injured trying to extinguish the flames; however, the nature of the injury was not characterized, other than to indicate that it did not require medical attention. There were 34 other non-injury incidents involving leaked fuel, generally without any fire ignition or other hazard other than the potential hazard(s) posed by that fuel leakage.
 - **Battery:** There were nine (4% of 234) incidents related to battery overheating, smoking, or catching fire. No injuries were reported.
 - **Motor or electrical cord:** There were five (2% of 234) incidents reporting a motor or electrical cord smoking or catching fire. No injuries were reported. One indicated that the electrical cord on the motor contributed to the fire; whereas, the other four indicated only the motor itself as the source of the fire hazard.
- **Stop/start control issues** (*i.e.*, mower power not turning off or on; power turning on or off by itself): There were 64 (27% of 234) incidents in this category. This includes one injury incident; the injury occurred when an employee’s hand was struck by a blade that would not shut-off via the safety device. Most of these start/stop control problems occurred for unexplained reasons, but a few consumers indicated problems with the switch, external governor, or cable.
- **Miscellaneous operational malfunctions:** In 30 incidents (13% of 234), a variety of operational malfunctions were reported. The incidents without reported injuries were related to blade adapter failures, belt/wheel malfunctions, engine/shaft/cord explosions, and breakage of captive washers, for example. There were three injuries: in one incident,

the grass catcher detached and caused a leg injury; in another incident, the allegedly poor design of the product may have caused a consumer to hurt his back while pulling the cord; and in the third incident, the consumer lacerated a finger on a sharp surface during assembly of the product.

- **Blade:** There were 19 (8% of 234) incidents that were related to blade breakage, detachment or accidental contact. These incidents included 3 injuries; in one incident, the operator slipped under the mower and suffered an avulsion injury to the foot; in another incident, a child suffered a toe amputation after falling and being struck by a mower whose operator did not immediately notice the child. These 2 injuries involved blade contact from someone who fell under the mower deck. The other injury was caused by blade breakage and resulted in a leg injury.
- **Comment/Concern about Recalls:** There were 13 (6% of 234) reports related to a recall notice. Most appear to only indicate acknowledgment or concerns in response to receipt of a fire related recall notice. A few describe an independently observed issue with the consumer's own mower, which the consumer contends is recall related.
- **Projectile/debris:** There were five (2% of 234) incidents in this category, all five resulting in injuries. In two of the incidents, debris shot out and hit the consumer without any other indication that parts of the mower had failed. Broken components were indicated as a factor in the remaining three incidents. In one instance, the safety shield broke, exposing the operator to flying rocks, pine cones, and other debris. In the second incident, a mower wheel broke off and was ejected striking the operator. In the last case, a pin broke loose and flew out at the operator.
- **Other/Unknown:** Staff is unable to determine a hazard pattern for one incident (less than 1% of the 234), which is the one and only reported fatality. The information provided is insufficient to categorize it under any of the hazard patterns above. The operator was mowing at her residence and fell on a steep hillside striking her head against a tree. She was found minimally responsive, still holding onto the lawn mower (which had stopped by that time) sitting up next to the tree. The victim was transported to a hospital, but died about 2 weeks later.

Table 3: Distribution of Reported Incidents, Non-fatal Injuries, and Fatalities Associated with Powered Walk-Behind Mower by Hazard Patterns
January 1, 2016 through October 31, 2019

Issues	Total Incidents		Fatalities		Nonfatal Injuries	
	Count	Percentage	Count	Percentage	Count	Percentage
Fire-Hazard Indicated	102	44	--	--	2	14
Unexplained fire/smoke	53	23	--	--	1	7
Gas leakage	35	15	--	--	1	7
Battery	9	4	--	--	--	--
Motor or electrical cord	5	2	--	--	--	--
No Fire-Hazard Indicated	118	50	1	100	12	86
Stop/start control issues	64	27	--	--	1	7
Miscellaneous operational malfunctions	30	13	--	--	3	21
Blade	19	8	--	--	3	21
Projectile/debris	5	2	--	--	5	36
Other/Unknown	1	< 1	1	100	--	--
Comment/Concern about Recalls	13	6	--	--	--	--
Total	234	100	1	100	14	100

Source: Consumer Product Safety Risk Management System (CPSRMS)

**TAB B: Health Sciences Analysis of Blade Contact Injuries
Associated with Walk-Behind Power Lawn Mowers, 2016 -
2019**

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**UNITED STATES
CONSUMER PRODUCT SAFETY COMMISSION
4330 EAST WEST HIGHWAY
BETHESDA, MARYLAND 20814**

Memorandum

DATE: December 5, 2019

TO: Sharon White, Project Manager, Walk-Behind Lawn Mower Petition
Division of Human Factors
Directorate for Engineering Sciences

THROUGH: Jacqueline N. Ferrante, Ph.D., Director,
Division of Pharmacology and Physiology Assessment
Directorate for Health Sciences

FROM: Stefanie Marques, Ph.D., Physiologist,
Division of Pharmacology and Physiology Assessment
Directorate for Health Sciences

SUBJECT: Health Sciences Analysis of Blade Contact Injuries Associated with Walk-Behind Power Lawn Mowers, 2016 - 2019

I. Introduction and Background

This memorandum responds to the “Petition for Revision of 16 CFR Part 1205-*Safety Standard for Walk –Behind Power Lawn Mowers*,” submitted by the Outdoor Power Equipment Institute (OPEI) on February 19, 2019.

Part 1205-*Safety Standard for Walk –Behind Power Lawn Mowers* (CPSC Standard) was first published in 1979, and was last amended in 1983. The standard applies to rotary walk-behind lawn mowers manufactured after June 30, 1982, with rigid or semi-rigid rotary blades that have a cutting width between 12 and 30 inches, a mass less than 200 pounds, and an engine with a horsepower of less than 8. The standard has labeling requirements intended to inform and warn consumers of the potential hazard to the foot and hand presented by the rotating blade of the mower.

The petitioner proposes using a pictorial-only warning label as an alternative to the warning label required by the CPSC standard, to help those who do not read or speak English to understand the hazards presented by the rotating lawn mower blade.

The petition specifically targets the warning label requirements intended to reduce the risk of injury to consumers from contact of their hand and feet with the rotating blade of the mower. Thus, the focus of this memorandum is Health Sciences (HS) staff's analysis of blade contact injuries associated with the use of walk-behind power lawn mowers from January 2016 to December 2018.

II. Health Sciences Staff's Analysis of Blade Contact Injuries Associated with Walk-Behind Power Lawn Mowers

National Electronic Injury Surveillance System (NEISS) Incidents

According to staff's analysis, an estimated 2,200 injuries (12% of the estimated 18,500 emergency department-treated injuries) involved blade contact or potential blade contact.¹ HS staff believes that NEISS incidents reveal two blade contact hazard patterns.

One hazard pattern involves injuries sustained from the consumer intentionally performing a task that they erroneously believed would not bring their hand or foot into the path of the rotating blade. In these incidents, the users described the following actions: "cleaning weeds near base of mower"; "reached under running lawn mower to remove clog"; "cleaning out chute of lawn mower"; and "readjusting height of lawn mower." Three percent of the estimated 18,500 emergency department-treated injuries involving blade contact or potential blade contact incident reports fit this hazard pattern. These incidents typically involved the user of the lawn mower sustaining the injury; most of these incidents resulted in injuries to the user's hand, and a number of these incidents resulted in finger amputations.

The other hazard pattern involves injuries sustained from the sudden and unexpected movement of the consumer, such as falling in the path of the lawn mower, or accidentally being run over by the lawnmower. In these incidents, the users described the following situations: "run over by power lawn mower"; "tripped over horseshoe and foot slipped under mower"; cutting wet grass, slipped and foot went under mower"; and "ran over foot mowing down a hill." Five percent of the estimated 18,500 emergency department-treated injuries from blade contact or potential blade contact incident reports² fit this hazard pattern. Although most of these incidents involved the lawn mower user, they also involved children falling into the path of the lawnmower. In addition, most of these incidents resulted in injuries to the user's foot, and a number of these incidents resulted in toe amputations.

¹ Potential incidents were incidents in which the report does not specifically state that blade contact occurred, but HS staff inferred that blade contact most likely occurred, based on the injury pattern. The inclusion of these incidents resulted in an increase in blade contact incidents reported in this memorandum, compared to the number reported in the Epidemiology memorandum.

² In 4 percent of the estimated 18,500 emergency department-treated injuries (the remaining blade contact or potential blade contact incident reports), the hazard pattern could not be determined, due to the limited information provided in the narrative of the report.

Reported Incidents

Out of 234 incidents, Heath Sciences staff determined there were five injuries to the hand, foot, and leg sustained from blade contact.³ In HS staff's opinion, the two most severe injuries fit the hazard pattern of the user suddenly and unexpectedly placing themselves near the rotating blade of the running lawnmower. In one incident, the victim was using the lawn mower to cut his lawn when his foot slipped under the cutting deck of the lawn mower, resulting in an avulsion to his foot (X1921203A). The other incident involves a 4-year-old victim who was not using the lawn mower, but playing in his yard where a landscaper was mowing the lawn. The child fell down a hill toward the lawn mower just as the landscaper was lifting the lawn mower over a rock, exposing the rotating blade. The child sustained an amputation to two of his toes, and while his toes were not reattached, he is expected to regain full mobility (IDI# 160804CFE0001).

The remaining three injuries did not seem to fit into either of the two hazard patterns identified above, and the injury severity could not be determined, due to the limited information provided in the report. The two incidents are below:

Incident #I16A0274A, a man and his neighbor sustained a leg injury when the rotary blade broke (received ER treatment). The lawn mower was the subject of recall.

Incident # I1870224A, a man who was struck by a spinning mower blade when his lawn mower would not shut off sustained an injury to his hand (received ER treatment).⁴

Incident # Y18A0463A, a man cut his fingers while assembling his lawn mower (seen by a medical professional).⁵

III. Discussion and Conclusion

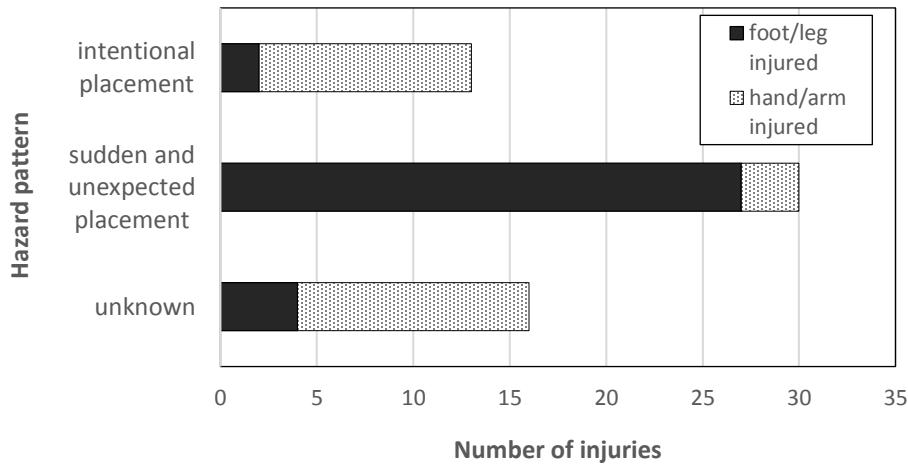
Analysis of the NEISS data reveals that two hazard patterns led to injuries while using walk-behind power lawn mowers: (1) intentional placement (of the body or a body part) near the rotating blade, and (2) sudden and unexpected placement (of the body or a body part) near the rotating blade. The blade contact injuries in the reported data also support these two hazard patterns. Figure 1 illustrates the proportion of injuries (from the combined NEISS and reported data) in each hazard pattern. Intentional placement mostly results in injuries to the hand and arm, such as finger amputations; while sudden and unexpected placement results in injuries to the foot and leg, such as toe amputations. Severe injuries, such as finger and toe amputations, could have long-lasting effects on the victim's quality of life. Finger amputations could result in loss of dexterity, making it difficult for the victim to hold a utensil, write, type, or play a musical instrument. Toe amputations could result in loss of mobility, making it difficult for the victim to maintain their balance, walk, or run.

³ The blade contact number, according to HS staff analysis, differs from Epidemiology Analysis, due to the inclusion of two additional incidents discussed below.

⁴ Epidemiology included this incident in the "stop/start control issues" category, but in HS staff's opinion, it is a confirmed blade contact incident.

⁵ Epidemiology included this incident in the "miscellaneous operational malfunctions" category, but in HS staff's opinion, it is a confirmed blade contact incident.

**Figure 1. HS Summary of Blade Contact injuries
(NEISS and reported data combined)**



**TAB C: Human Factors Analysis of Labeling for Walk-Behind
Power Lawn Mowers, Petition CP 19-01**

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**UNITED STATES
CONSUMER PRODUCT SAFETY COMMISSION
4330 EAST WEST HIGHWAY
BETHESDA, MARYLAND 20814**

Memorandum

Date: December 26, 2019

TO: File
Walk-Behind Power Lawn Mower Petition

THROUGH: Rana Balci-Sinha, Ph.D., Director,
Division of Human Factors
Directorate for Engineering Sciences

FROM: Sharon White
Engineering Psychologist
Division of Human Factors
Directorate for Engineering Sciences

SUBJECT: Human Factors Analysis of Labeling for Walk-Behind Power Lawn Mowers,
Petition CP 19-01

I. INTRODUCTION

The *Safety Standard for Walk-Behind Power Lawn Mowers*, 16 CFR part 1205, prescribes safety requirements, including performance and labeling requirements, for certain rotary and reel-type walk-behind power lawn mowers. The performance requirements of the standard apply to rotary mowers. The labeling requirements apply to both rotary and reel-type mowers. The label currently required for both mower types contains text and a pictorial which is intended to reduce the risk of injury primarily of the hands and feet of consumers due to contact with the mower's rotating blade.

The Outdoor Power Equipment Institute (OPEI) petitioned the Consumer Product Safety Commission (Commission) to revise the labeling requirements at 16 CFR § 1205.6 to allow the option of using an International Organization for Standardization (ISO)-approved pictorial-only warning. OPEI asserts that a pictorial-only warning would communicate the safety message to consumers regarding blade-contact injuries, regardless of their language or literacy skills. Additionally, OPEI states that the proposed pictorial-only warning would harmonize the label globally for manufacturers. OPEI states that the proposed warning label addresses the same hazard to hands and feet as the required warning, but it constitutes an enhancement because it depicts the hazard to hands as well as feet.

CPSC Hotline: 1-800-638-CPSC (2772) CPSC's Web Site: <http://www.cpsc.gov>

This memorandum assesses the effectiveness of the petitioner's proposed pictorial-only warning label.

II. INJURY DATA

Staff estimated 18,500 emergency department-treated injuries related to walk-behind power lawn mowers from January 1, 2016 to December 31, 2018. Twelve percent of the estimated 18,500 emergency department-treated injuries (an estimated 2,200 incidents) involved blade contact or potential blade contact. Of the estimated 18,500 incidents, and based on the available data, three percent of these incidents involved blade contact, and occurred while the person was performing some task in the vicinity of the mower or while performing a task that consumers erroneously believed would not bring their hand or foot into the path of the rotating blade. Such tasks included clearing grass from the discharge chute or adjusting the height of the mower. Five percent of the estimated 18,500 involved blade contact and sudden and unexpected movement of the user and/or mower (*e.g.*, cutting wet grass, slipped and foot went under mower, tripped over horseshoe and foot slipped under mower).

Staff also searched the CPSC databases for incidents related to walk-behind power lawn mowers for the period January 1, 2016 to October 31, 2019. Staff identified 234 non-NEISS walk-behind power lawn mower incidents or complaints. Staff identified two blade-contact incidents among those 234 reports. Both incidents involved sudden and unexpected movement of the user and/or mower. The non-NEISS reports do not contain information regarding the ability of consumers to read or understand the required English warning.

III. DISCUSSION

Generally, a pictorial-only warning may communicate a safety message in the absence of words – a feature that is a benefit to non-English speakers and readers and to those with low literacy skills. However, for reasons discussed in this memorandum, there are several factors that may impact the effectiveness of a pictorial-only warning.

A. Considerations for Warnings

Risk information is communicated via warnings (Dejoy, 1999). Warnings may be conveyed via text only, text plus symbol combinations, warning symbols only, warning symbols supplemented with word messages, and other modes of communication (Dewarr, 1999; Goldsworthy and Kaplan, 2009). In this case, OPEI petitioned the Commission to have the option of conveying the risk information via warning symbols only.

Researchers maintain that for warnings to achieve the ultimate goal of inducing safety-related behavior, three factors must be met. These factors are: (1) noticing the warning, (2) processing the safety messages, and (3) motivating behavioral change (Barbera and Gill, 1986; Rogers, Lamson, and Rousseau, 2000; Rousseau and Wogalter, 2006; Laughery and Wogalter, 2006; Heckman et al., 2010; Caffaro and Cavallo, 2015; and Kalsher, Obenaur, and Weiss, 2016). Failures at any of these stages can reduce a warning's effectiveness. ESHF staff considered

these factors and evaluated the petitioner's proposed warning to determine whether the warning meets these criteria.

B. Petitioner's Proposed Label

OPEI requests permitting a pictorial-only warning (Figure 1) as an option to the warning required by 16 CFR §1206.5 (Figure 2). Essentially, OPEI requests the option of labeling their product as specified in Figures 1 or 2.

1. Noticing the Warning

Warnings must possess characteristics that make them prominent and salient so that they stand out from background clutter and noise (Wogalter, Kalsher, and Racicot, 1993a). Use of symbols is one method to achieve salience. Several studies have shown that warnings with symbols are more noticeable than warnings without symbols (Laughery et al., 1993; Heck, 1996; and Bzostek and Wogalter, 1999). Additionally, placing a border around important safety information is another way to make a warning stand out from, or contrast with, its background, by enhancing the figure-ground relationship (Wogalter and Vigilante, Jr., 2006). Colors may also assist in achieving salience because color may help to make warnings stand out from the environments in which they are placed (Bzostek and Wogalter, 1999; Wogalter and Vigilante, Jr., 2006). Size of the warning is another factor that may affect warning noticeability. Godfrey, Rothenstein, and Laughery, 1985, suggested that a larger warning label with larger print components makes the warning more noticeable. Additionally, placement of a warning may also influence its prominence. For example, consumers are more likely to notice a warning placed in a location on the product where it is routinely visible, rather than placed somewhere on the product where it is out of the user's line of sight.

Some of the requirements for the proposed pictorial-only warning are similar to the Commission-required warning. For example, the petitioner proposes that a black border surround the label, similar to the Commission-required warning. In addition, the petitioner proposes the same color scheme as the Commission-required warning - i.e., red, black, white, and yellow. Additionally, the petitioner proposes that the requirements for placement of the warning remain unchanged from the current label. Under CPSC's existing requirements for rotary mowers, the label must be placed on the blade housing and it must "be located as close as possible to any discharge opening, or if there is no discharge opening, in a position that is conspicuous to an operator in the normal operating position." For reel-type mowers, the proposed label's requirements specify that the label must be "located as close to the center of the cutting width of the blade as possible. However, in the absence of a suitable mounting surface

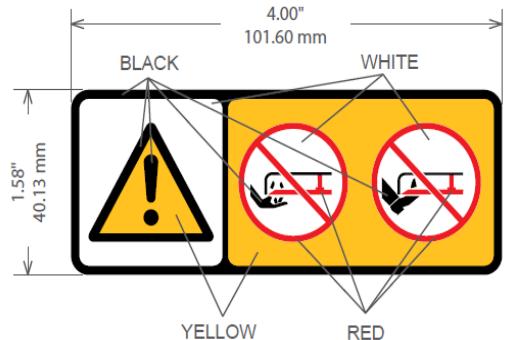


Figure 1

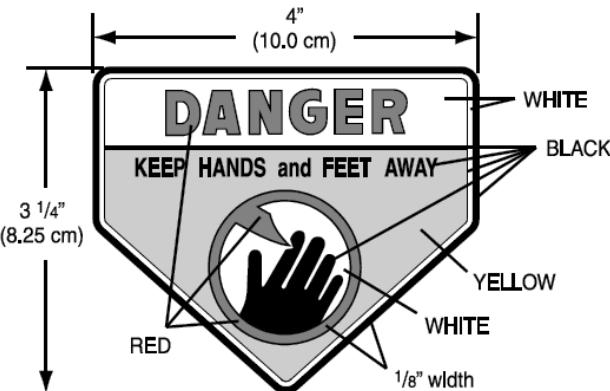


Figure 2

near the center of the cutting width, the label shall be placed on the nearest suitable mounting surface to the center of the cutting width.” Thus, the petitioner’s proposed label requirements are equivalent to CPSC’s current requirements.

The petitioner’s proposed warning and CPSC’s required warning differ in requirements for size, shape, and components contained within the warning, however. For example, the petitioner proposes that the warning label be 1.58 inches high and 4 inches wide. The standard at 16 CFR § 1205.6(a) requires the label to be at least 3-¼ inches high and 4 inches wide. Additionally, the proposed warning is rectangular; however, the required warning is diamond-shaped. The petitioner proposes a pictorial-only warning, but the required warning contains both text and a pictorial. Moreover, the petitioner’s proposed warning contains a safety alert symbol (*i.e.*, an exclamation point surrounded by an equilateral triangle) intended to alert users of a hazard. CPSC’s required warning does not contain this symbol.

Rotary lawn mowers come in various colors, including red, black, blue, and green. Reel-type power mowers are typically green with a red blade. The required warnings on both types of lawn mowers are likely to stand out from the background, and therefore, are likely to be conspicuous, due sufficient contrast between the label and the background of the lawn mowers. There are other labels present on the mowers. However, the required label is likely to attract more attention because of its diamond shape, compared to the typical rectangular or square shape of all the other labels. Additionally, the required label is in a location where users are likely to see it. This further enhances the conspicuity of the warning.

Given that the petitioner proposes similar labeling requirements, in terms of color, border, and placement, to the Commission-required warning, and given that ESHF staff finds that the required warning is in a prominent location and is likely to be conspicuous, ESHF staff concludes that consumers are likely to notice the petitioner-proposed warning. Despite the smaller size and typical shape, and the lack of text in the petitioner’s proposed warning label, ESHF staff believes that the requirements for conspicuity and placement of the proposed warning may increase the likelihood that consumers will notice it.

2. Processing the Safety Messages

Once consumers notice warnings, they must process (read and understand) the warning to make appropriate decisions regarding the hazard, how to avoid it, and the consequences of ignoring the warning.

One issue with processing safety messages is familiarity with a product. Although consumers may notice the presence of the pictorial-only warning, they may not stop to examine it (Wogalter, 2006). Familiarity with the product may be a reason they overlook the warning. In this case, lawn mowers are a familiar product, and they are the most commonly used devices for maintaining household lawns. These are products that are used frequently during the growing season, sometimes as often as once per week. Research demonstrates quite clearly that users who are more familiar or experienced with a product or a similar product are less likely to read a warning (Wogalter, Desaulniers, Breisford, Jr., 1986; Sanders and McCormick, 1993;

Vrendenburgh and Zackowitz, 2006; and Wogalter, Laughery, Sr., and Mayhorn, 2012), much less attempt to interpret its meaning.

If consumers stop to examine the warning, consumers need to interpret the meaning of the warning correctly to make appropriate decisions regarding the hazard, how to avoid the hazard, and the consequences of ignoring the warning. Language and literacy skills, and the clarity of the safety message or pictorial may impact this. Research on warnings indicates that there are a number of ways to increase the likelihood that consumers will read and understand the safety messages. Pictorials may assist. Research suggests that pictorials can communicate safety messages quickly across cultures having different languages. This is important because the petitioner suggests that the proposed pictorial-only warning is necessary to communicate the warning effectively to consumers, regardless of their spoken language or degree of literacy. However, there may be issues with consumers processing the petitioner's proposed warning label.

It is necessary to test symbols before they are used to determine whether they convey their intended meaning (DTI, 2000, Wogalter, Conzola, and Smith-Jackson, 2002; Hicks, Bell, and Wogolter, 2003; Deppa, 2009; ANSI Z535.3 - 2011; and Wogalter, Laughery, Sr., and Mayhorn, 2012). The petitioner indicated that the pictorial-only warning is approved by ISO. However, the petitioner did not provide any information indicating that the symbol was submitted to a comprehension test to determine whether consumers can correctly interpret its meaning.

ESHF staff examined the pictorial and noted that the black object intended to represent the lawn mower housing is not clearly depicted. Some consumers may wonder, for example, what the rectangular drawing represents, what section of the product is represented, or where that "spot" is located. As for the hand in the pictorial, the hand is not easily recognizable and there does not appear to be enough fingers below the blade to recognize easily enough that it is a hand. Because the symbol is not depicted clearly, users may not be able to comprehend the intended meaning of the warning.

Moreover, the available data do not specify whether the blade-contact incidents were due to the inability of consumers to read and understand the required English warning; nor did the petitioner provide this information.

3. Motivating Behavioral Change

Research suggests that to motivate behavioral change, the warning should answer the question: "Why should I obey?" Including information in a warning about the consequences of ignoring a warning may influence consumer motivation (Wogalter, Laughery, Sr., and Mayhorn, 2012). The petitioner's proposed pictorial-only warning attempts to show the consequences of making hand or foot contact with a blade (*i.e.*, severed finger/foot/toe) under the blade housing. However, the image of the severed fingers and foot in the petitioner's proposed warning does not contain high-shock value, compared to the severed finger depicted in CPSC's required warning. This may be because the hand, foot, and blade in the petitioner's proposed warning are not as realistic in appearance, compared to the hand and blade depicted in the required warning. Therefore, ESHF staff believes that the petitioner's proposed warning lacks motivational content.

C. The Warning Label Required in 16 CFR § 1205.6

Staff also considered CPSC's required warning in light of the three criteria necessary to induce safety-related behavior.

Noticing the warning. ESHF staff believes that CPSC's required warning is conspicuous, due to its placement and contrast with a lawn mower's background. Additionally, the required warning is larger compared to the petitioner's proposed warning. This increases the legibility of the components within the warning. Furthermore, the required warning has an atypical shape, compared to the petitioner's proposed warning. This enhances the required warning's conspicuousness and attention-getting characteristics.

Processing the safety message. The required warning contains text and a pictorial to communicate the safety message, unlike the proposed warning. Specifically, the required warning contains the signal word, DANGER, which, according to ANSI Z535.4, is to be limited to the most extreme situations, because it indicates a hazard that, if not avoided, will result in death or serious injury. In this case, a consumer's fingers and feet will likely be severely injured (*e.g.*, amputated), if they make contact with a lawn mower's rotating blade.

Additionally, CPSC's required warning clearly and briefly informs consumers, in all capital letters, what to do to avoid the hazard, which is: KEEP HANDS AND FEET AWAY. According to the research, symbols can fail to communicate the intended message if they are poorly designed. Additionally, research suggests that symbols that may not be understood correctly can perform better, if accompanied by text. Presumably, this may be due to greater textual detail that provides additional information that may not be readily apparent in a pictorial (Wogalter and Sojourner, 1997). Moreover, words and syntax are deemed to be more universally known and understood than the elements of a pictorial (Frantz, Rhoades, and Lehto, 1999). Although the available data do not specify whether the blade-contact incidents were due to the inability of consumers to read and understand the required English warning, the pictorial in the required warning is clear, and may communicate the warning to users who do not read English and who may lack literacy skills. Additionally, the petitioner did not provide information that suggests that the pictorial that accompanies the required warning is not clear.

Motivating behavioral change. The required warning contains motivational content because it contains a pictorial that realistically depicts the consequences of hand-to-blade contact – *i.e.*, a finger being severed or nearly amputated. The hand depicted in CPSC's warning label is realistic in appearance, and therefore, has greater shock value than OPEI's pictorial-only warning depicting the consequences of blade contact. Although the CPSC's pictorial does not depict a severed foot, as the petitioner depicts in its proposed label, consumers may infer from the pictorial of a severed finger what can happen to their foot, if they ignored the warning, particularly because the accompanying text also instructs users to keep their feet away from the mower blade.

Therefore, ESHF staff believes that the required warning, containing both text and a pictorial, is likely to be more effective than the proposed pictorial-only warning in communicating the intended message and motivating behavioral change.

D. Developing a Different Pictorial-Only Warning Label

Warnings are generally intended to convey the following three concepts: the hazard, the means of avoiding the hazard, and the consequences of ignoring the warning. Therefore, staff could consider the option of developing a different pictorial-only warning to convey one or more of these concepts, because staff believes that the petitioner's proposed pictorial-only warning is likely to be less effective than the Commission-required warning. More than one symbol, however, may need to be combined to cover all three concepts (Wogalter et al, 2006). However, the available data do not suggest the need for a pictorial-only warning. The available data do not specify whether the blade-contact incidents were due to the inability of consumers to read and understand the required English warning. Moreover, the petitioner did not provide any information to demonstrate the need for a pictorial-only warning. Furthermore, the petitioner provided no information to demonstrate that the pictorial accompanying the CPSC warning is difficult to understand. If staff developed a different pictorial-only warning, it would not harmonize with global standards as the petitioner's proposed warning does.

Furthermore, staff asserts that, similar to the proposed pictorial-only warning, a new, pictorial-only warning should be tested for comprehension before it is used. Based on ANSI Z535.3-2011, the American National Standard Criteria for Safety Symbols, a symbol without accompanying text should meet 85 percent correct responses, with no more than 5 percent critical confusion, from a sample of 50 participants who represent the target population. ANSI Z535.3 recommends three progressive tests: (1) a preliminary open-ended test, (2) a comprehension estimation procedure, and (3) the final open-ended test. Based on the overall comprehension scores of candidate pictorials against the acceptance criteria, further pictorial development effort and test iterations may be necessary.

Staff would also recommend empirical studies to assess the effectiveness of the proposed warning, or any other warning, staff could develop. This undertaking would require significant staff resources to develop a pictorial-only warning and test its comprehension and effectiveness.

E. Permitting a Pictorial-Only Warning Label

If the Commission granted the petition, and manufacturers opted to use OPEI's pictorial-only warning, staff concludes that manufacturers would be using a warning label that is likely to be less effective than the Commission-required warning.

F. Potentially Addressable Incidents

There are two categories of walk-behind power lawn mower incidents that involved blade contact. Based on the available data, three percent of the estimated 18,500 incidents involving walk-behind power lawn mowers involved blade contact, and they occurred while the person was performing some task in the vicinity of the mower or while performing a task that consumers believed erroneously would not bring their hand or foot into the path of the rotating blade. Such tasks included cleaning weeds near the base of the mower, clearing grass from the discharge chute, or adjusting the height of the mower. Five percent of the estimated 18,500 incidents involved blade contact and occurred when there was sudden and unexpected movement of the

user and/or mower (*e.g.*, cutting wet grass, consumer slipped, and their foot went under mower; tripped over horseshoe and foot slipped under mower).

According to the research on warning labels, the definition of a “warning” is any information that has the potential to change behavior and prevent or reduce the likelihood of an incident. Therefore, a warning label may be able to reduce the likelihood that consumers will engage in tasks that fall in the first category above, because those tasks involved consumers intentionally engaging in activity near the mower blade (*e.g.*, cleaning weeds from the base of the mower). If consumers follow the instructions to keep their hands and feet away from the mower, these injuries may be avoided. In contrast, a warning label is not likely to prevent the slips, trips, and falls that land in the second category, because consumers may not be able to avoid these actions. Therefore, staff believes that labeling may reduce the potential for a comparatively low number of incidents.

IV. Conclusion

To respond to the petition, ESHF staff assessed whether the proposed pictorial-only warning would be effective in addressing blade-contact injuries. For warnings to be effective, warnings must be noticed, read and understood, and motivate behavioral change. ESHF staff believes that consumers are likely to notice the petitioner-proposed warning, despite its smaller size, typical shape, and lack of text, compared to the CPSC-required warning. Although consumers may notice the presence of the pictorial-only warning, they may not stop to examine it, however, due to the familiarity affect. This issue is also true for CPSC’s warning label. Conversely, if consumers examine the proposed warning, ESHF staff believes that some consumers may have difficulty correctly interpreting the intended message, due to the ambiguity of what the pictorial-only warning means. The petitioner did not provide any information indicating that it has submitted the proposed warning to comprehension testing to ensure that the proposed warning clearly communicates the intended message. ANSI Z535.3 recommends that symbols be tested before using them. Finally, the proposed warning lacks motivational content, which is critical for compliance with the warning.

In contrast, staff believes that the CPSC warning meets the criteria needed to induce behavioral change. Although labeling generally has limited effectiveness, staff believes that the CPSC-required warning is likely to be more effective in changing behavior because it has more attention-getting characteristics, it may be easier to read and understand (process), and has high motivational content. Therefore, ESHF staff believes that the petitioner’s proposed warning is likely to be less effective than the CPSC warning.

Staff could consider the option of developing a different pictorial-only warning. However, the available data do not suggest the need for a pictorial-only warning. Furthermore, the petitioner provided no information to demonstrate that the pictorial that accompanies the CPSC warning is difficult to understand. Additionally, a different pictorial-only warning would not harmonize with the petitioner’s proposed warning. Furthermore, it would require significant staff resources to develop and test pictorials.

Potentially, labeling could address incidents in which users engage in a task that they erroneously believe will not bring their hands and feet into contact with the rotating blade. Only three percent of the estimated 18,500 incidents that occurred between January 1, 2016 and December 31, 2018 fit this hazard pattern. This may suggest that labeling may potentially address a comparatively low number of blade-contact incidents.

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**TAB D: Assessment of Existing Standards and Regulations Related
to Walk-Behind Power Lawn Mowers**

**T
A
B
D**



**UNITED STATES
CONSUMER PRODUCT SAFETY COMMISSION
4330 EAST WEST HIGHWAY
BETHESDA, MARYLAND 20814**

Memorandum

DATE: December 3, 2019

TO: Sharon White
Walk-Behind Power Lawn Mower Petition Project Manager
Division of Human Factors
Directorate for Engineering Sciences

THROUGH: Mark Kumagai, Director,
Division of Mechanical and Combustion Engineering
Directorate for Engineering Sciences

FROM: Andrew Newens
Mechanical Engineer
Directorate for Engineering Sciences

SUBJECT: Assessment of Existing Standards and Regulations Related to Walk-Behind Power Lawn Mowers

I. Introduction and Background

On February 19, 2019, the Outdoor Power Equipment Institute (OPEI) petitioned the Consumer Product Safety Commission (CPSC) to revise 16 CFR part 1205 – *Safety Standard for Walk-Behind Power Lawn Mowers* (CPSC standard), to allow using a pictorial-only warning label as an alternative to the label required by the CPSC standard, to help consumers who do not read or speak English. The petitioner seeks a limited, non-material change to the standard, which it says will provide stakeholders with an option to modernize and globally harmonize this safety warning to consumers, regardless of their spoken language or degree of literacy. The petitioner proposes an alternative warning label that will leave the standard otherwise unchanged.

OPEI is an American National Standards Institute (ANSI)-accredited Standards Developing Organization (SDO) that proposes and maintains the ANSI standard for the subject products: ANSI/OPEI B71.1-2017 – *American National Standard for Consumer Turf Care Equipment – Pedestrian Controlled Mowers and Ride-On Mowers – Safety Specifications*. OPEI additionally serves as a U.S. voice in international standards development for the subject products through the

International Organization for Standardization (ISO) and International Electrotechnical Commission (IEC).

The petitioner states that since the adoption of the CPSC standard more than 30 years ago, global standards for effective warnings have evolved to include the adoption of pictorials intended for use across all global markets. More than 300 languages are spoken in the United States, and across all global markets, considerable numbers of consumers do not read any language proficiently. The petitioner asserts that, in consideration of these market realities, providing consumers with understandable, non-language warnings is essential to consumer safety.

This memorandum provides a review of existing standards for walk-behind power lawn mowers, federal regulations, and voluntary and international standards.

II. Existing Standards

Consumer models of walk-behind power lawn mowers sold in the United States are required to meet the CPSC standard, 16 CFR part 1205. They are also manufactured to meet the ANSI/OPEI B71.1 voluntary safety standard, or voluntary international standards, including ISO 5395.

CPSC Standard

The CPSC standard was first published in 1979, and last amended in 1983. It applies to all rotary walk-behind power lawn mowers manufactured after June 30, 1982, except for the requirements for safety warning labels, which apply to all rotary and reel-type walk-behind power lawn mowers manufactured after December 31, 1979. A rotary mower has one or more blades underneath the deck of the mower that turn in a direction parallel to the deck. A reel-type mower has one or more helical blades that cut grass by scissoring it against another bar or blade.

The standard prescribes safety requirements for certain walk-behind power lawn mowers, including labeling and performance requirements intended to reduce the risk of injury, primarily to the feet and hands of consumers, caused by contact with the rotating blade of the mower. The standard defines “walk-behind power lawn mower” as a grass cutting machine, either pushed or self-propelled, with a minimum cutting width of 12 in (305 mm) that employs an engine or a motor as a power source and is normally controlled by an operator walking behind the mower. It applies to mowers with rigid or semi-rigid rotary blades that meet any of the following criteria:

- a) Cutting width between 305 mm (12 inches) and 762 mm (30 inches)
- b) Mass less than 90.7 kg (200 pounds)
- c) Engine horsepower less than 6 kW (8 hp)

These criteria generally distinguish consumer lawn mowers from larger, more powerful lawn mowers that are used in commercial services, which are excluded from the standard. Figure 1 is representative of a typical consumer walk-behind power lawn mower: (1a) rotary mower, and (1b) reel-type mower.



Figure 1a. Walk-behind rotary power lawn mower



Figure 1b. Walk-behind reel-type power lawn mower

Although the standard 16 CFR § 1205.6 covers performance requirements for protective shields, blade controls, and specifications for safety warnings, the focus of the subject petition is the requirements for the on-product safety warning label:

§ 1205.6 Warning label for reel-type and rotary power mowers.

- (a) *General.* Walk-behind power lawn mowers shall be labeled on the blade housing or, in the absence of a blade housing, on other blade shielding or on an adjacent supporting structure or assembly, with the warning label shown in Fig. 7. The label shall be at least 3.25 in (82.5 mm) high and 4 in (102 mm) wide, and the lettering and symbol shall retain the same size relation to each other and to the label as shown in Fig. 7.

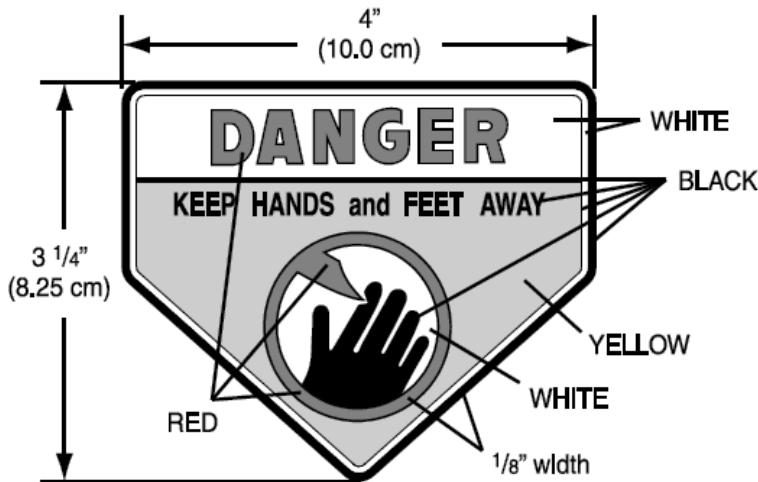


FIGURE 7

(b) *Rotary mowers.* Walk-behind rotary mowers shall have one label as shown in Fig. 7, on the blade housing. The label shall be located as close as possible to any discharge opening, or, if there is no discharge opening, in a position that is conspicuous to an operator in the normal operating position.

(c) *Reel-type mowers.* Walk-behind power reel-type mowers shall have one label as shown in Fig. 7, located as close to the center of the cutting width of the blade as possible. However, in the absence of a suitable mounting surface near the center of the cutting width, the label shall be placed on the nearest suitable mounting surface to the center of the cutting width.

[44 FR 10024, Feb. 15, 1979, as amended at 45 FR 86417, Dec. 31, 1980]

The positioning of the yellow safety label, as described in the standard, can be seen in the photographs of Figures 1a and 1b.

ANSI Standard

ANSI/OPEI B71.1 (ANSI standard) is a voluntary standard for consumer walk-behind power lawn mowers that was first published in 1960, and subsequently revised through 14 editions, including the most recent edition in 2017, to reflect product innovations and market changes. The ANSI standard was revised when the CPSC standard became effective in 1980, adding it as an annex to the voluntary standard.

The scope of the standard covers specifications for walk-behind and ride-on lawn mowers for personal use around homes related to safety issues including: uniform operating environments, operator controls, guards and shields, electrical components, fuel ignition, attachments, blade speed, thrown objects, associated tests, safety instructions and warnings, and servicing guidelines.

Although the CPSC standard is limited to walk-behind lawn mowers of certain sizes and types, the ANSI standard more broadly covers a multitude of consumer lawn mower types, including reel and rotary pedestrian-controlled lawn mowers, reel and rotary ride-on lawn mowers, ride-on lawn tractors with mower attachments, ride-on lawn and garden tractors with mower attachments, and lever-steer and zero-turn ride-on mowers. The scope of the ANSI voluntary standard includes lawn mowers that are sold in and outside of the United States (some of which are subject to the CPSC Standard).

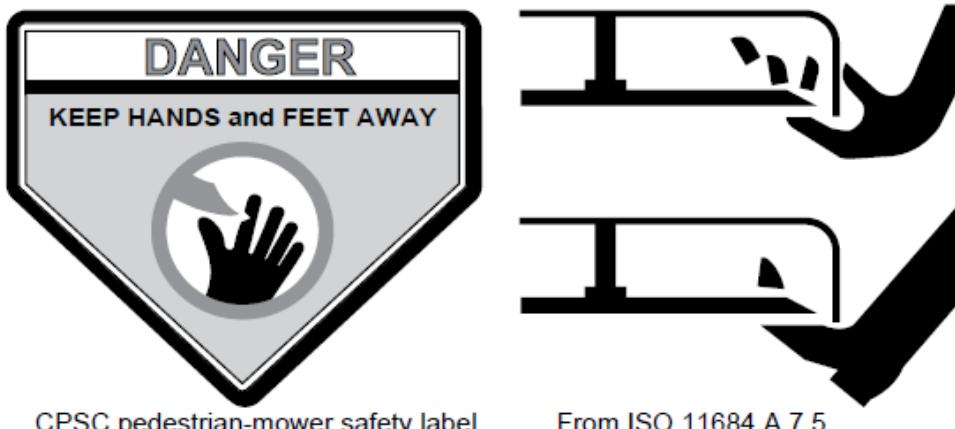
The sections of the current ANSI standard relevant to blade-contact warning labels on walk-behind mowers apply to mowers outside the scope of the CPSC standard, and therefore, outside the scope of the subject petition. Specifically, section 13.3 applies to mowers that are out of scope, due to their larger size (“pedestrian controlled machines \geq 200 lbm, \geq 8 hp and \geq 30 in width of cut”). Section 14.4 applies to mowers that are within the size limits of the CPSC standard, but are out of scope because they are sold outside of the United States.

The petitioner states that it seeks a change to the CPSC standard label requirements to harmonize the requirements with the current global standards, which includes section 14.4 because it covers small mowers. However, section 14.4 merely refers back to the same wording in section 13.3, which states:

A safety pictorial warning of blade contact shall be placed on the mower at or near each discharge opening. The warning may be placed on the discharge chute extension or deflector if it automatically returns to the guarded position after any movement from that position. If a signal word is used, it shall be DANGER. The warning shall conform to the requirements of ANSI Z535.4, ISO 11684 or CPSC 1205. Use of multiple safety symbols/signal words is permissible. Use of ONLY single-color molded in warning is not permissible.

Annex B of the ANSI standard provides example safety pictorials that may be used to convey on-product safety information:

The pictorials shown are suggested; however, the manufacturer may modify, combine or develop new pictorials to match the hazard pattern, machine and message, following the guidelines set out in ISO 11684.



The ANSI standard references ISO 11684:1995 – *Tractors, machinery for agriculture and forestry, powered lawn and garden equipment – Safety signs and hazard pictorials – General principles for the compliance of safety signs and symbols*.

Therefore, manufacturers selling mowers outside of the U.S. have the option to use one or both of the suggested symbols. They could even develop a different symbol as long it meets the guidelines of ISO 11684, which allows the use of pictorial symbols either with or without text.

Annex A of the ANSI standard states the rationale for the pictorials:

These labeling requirements are intended to allow the manufacturer some latitude in selecting the method of warning multicultural users of hazards inherent in the use of the machine. They also promote harmonization with global mower standards.

Other international standards

Staff researched and found only one additional related international mower standard, ISO 5395 (ISO standard), which consists of the following parts, under the general title *Garden equipment – Safety requirements for combustion-engine-powered lawnmowers*:

- *Part 1: Terminology and common tests*
- *Part 2: Pedestrian-controlled lawnmowers*
- *Part 3: Ride-on lawnmowers with seated operator*

The ISO standard was last updated in 2013 and prepared by the European Committee for Standardization (CEN) Technical Committee CEN/TC 144, *Tractors and machinery for agriculture and forestry*, in collaboration with ISO Technical Committee TC 23, *Tractors and machinery for agriculture and forestry*.

Similar to the ANSI standard, the scope of the ISO standard applies to mowers sold outside of the U.S. and covers safety issues such as: operator controls, guards/enclosures, electrical components, exhaust fumes, noise, blade stopping time, thrown objects, associated tests, and markings/warnings.

The section of the ISO standard relevant to warning labels is in *Part 2: Pedestrian-controlled lawnmowers*. The safety warning requirements are listed in section 7.2.2, stated as follows:

7.2.2 Warning requirements

All lawnmowers shall be marked with warnings with the substance of the following:

- WARNING: READ INSTRUCTION HANDBOOK!
- WARNING: KEEP BYSTANDERS AWAY!
- WARNING: KEEP HANDS AND FEET AWAY FROM THE BLADES!

The text can be replaced by safety signs, see examples in ISO 11684. If safety signs are used, they shall be explained in the instruction handbook.

The warnings shall be located in a readily visible position close to the hazard and shall resist the anticipated service conditions, *e.g.*, the effects of moisture and weathering exposure.

III. Alternative Warning Proposal

The petitioner, OPEI, requests that 16 CFR § 1205.6 be revised, as follows to allow for an alternative pictorial-only warning:

§ 1205.6 Warning label for reel-type and rotary power mowers.

(a) *General.* Walk-behind power lawn mowers shall be labeled on the blade housing or, in the absence of a blade housing, on other blade shielding or on an adjacent supporting structure or assembly, with the warning label shown in Fig. 7 (a) or (b). The label (7 (a)) shall be at least 3.25 in (82.5 mm) high and 4 in (102 mm) wide, and the lettering and symbol shall retain the same size relation to each other and to the label as shown in Fig. 7 (a).

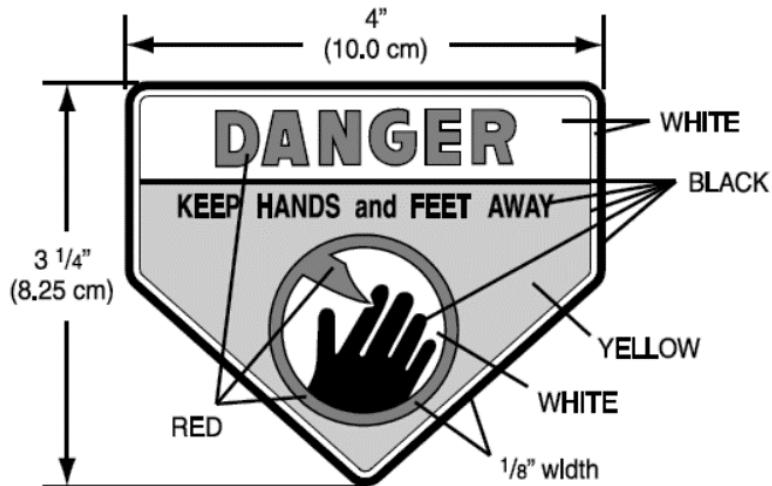


FIGURE 7 (a)

(b) Alternative warning label (pictorial-only). The following pictorial derived from ISO provides an option for a pictorial-only warning for blade contact hazards, as an alternative to 7 (a) above. The label (7 (b)) shall be at least 1.58 in (40.13 mm) high and 4 in (101.60 mm) wide.

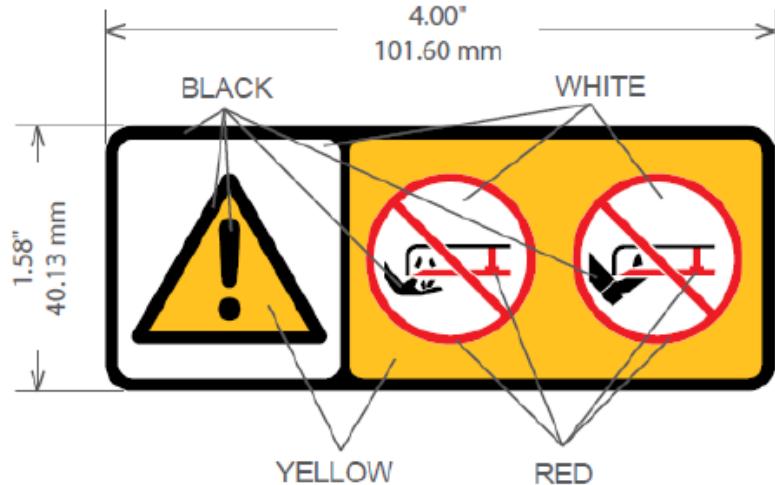


FIGURE 7 (b)

(c) Rotary mowers. Walk-behind rotary mowers shall have one label as shown in Fig. 7 (a) or (b), on the blade housing. The label shall be located as close as possible to any discharge opening, or, if there is no discharge opening, in a position that is conspicuous to an operator in the normal operating position.

(d) Reel-type mowers. Walk-behind power reel-type mowers shall have one label as shown in Fig. 7 (a) or (b), located as close to the center of the cutting width of the blade as possible. However, in the absence of a suitable mounting surface near the center of the cutting width, the label shall be placed on the nearest suitable mounting surface to the center of the cutting width.

IV. Discussion and Conclusion

Consumer models of walk-behind power lawn mowers sold in the United States must meet the labeling requirements of the CPSC standard, 16 CFR part 1205. Mowers sold outside the United States subject to the ANSI/OPEI B71.1 and ISO 5395 safety standards must meet their labeling requirements.

The CPSC standard prescribes the use of a specific blade-contact warning label without any other options. The ANSI and ISO standards allow manufacturers some latitude in selecting the method of warning, providing options for text or pictorial-only symbols. The goal of providing these options is to reach more multicultural users with the safety messages.

The petitioner states that its proposed alternative pictorial-only warning label addresses the same hazard of blade injury as the CPSC standard. The petitioner also asserts that the proposed warning is an enhancement because the pictorial demonstrates potential injuries to feet and

hands, where that injury potentially occurs. The petitioner's proposed warning label is based on the guidelines in ISO 11684, which have been in industry use since 1995. Accordingly, the petitioner requests a change to the CPSC standard to allow manufacturers the option of using a pictorial-only warning label in place of the one currently required by the CPSC standard to be consistent with existing voluntary and international standards that are intended for more multicultural and global populations.

TAB E: Requirements for Walk-Behind Power Lawn Mowers

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**UNITED STATES
CONSUMER PRODUCT SAFETY COMMISSION
4330 EAST WEST HIGHWAY
BETHESDA, MARYLAND 20814**

Memorandum

DATE: January 9, 2020

TO: Sharon White, Project Manager
Engineering Sciences, Division of Human Factors

THROUGH: Robert Kaye, Assistant Executive Director
Office of Compliance and Field Operations

FROM: Troy Whitfield, Compliance Officer
Division of Regulatory Enforcement, Office of Compliance and Field Operations

SUBJECT: Requirements for Walk-Behind Power Lawn Mowers

Staff prepared this memorandum in response to a petition from the Outdoor Power Equipment Institute requesting a revision to the existing regulation for walk-behind power lawn mowers, 16 CFR part 1205 (standard). As the project manager for the petition, you requested information on applicable laws and compliance activities associated with walk-behind power lawn mowers.

The standard for walk-behind power lawn mowers was promulgated in February 1979, and is intended to address the risk of injury to the hands and feet of consumers caused primarily by contact with the rotating blade of the mower. The standard prescribes safety requirements for consumer walk-behind rotary power lawn mowers and reel-type mowers, including performance and labeling requirements. The performance requirements apply to rotary mowers, and the labeling requirements apply to rotary and reel-type mowers. The performance standard addresses not only blade contact, but it also contains general requirements for shielding and blade control systems to help prevent blade contact injuries.

For rotary mowers, the labeling requirement of the standard involves placing the label shown in Figure 1 on the blade housing (mower deck) as close as possible to the discharge opening. In the absence of any such opening, the warning label shall be placed in a position that is clearly visible to the consumer when using the mower from the normal operating position. This same label is also to be used on reel-type mowers and placed as close to the center of the blade cutting width as possible. With no suitable mounting surface near the center of the cutting

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width, the label shall be placed on the nearest, suitable mounting surface to the center of the cutting width.

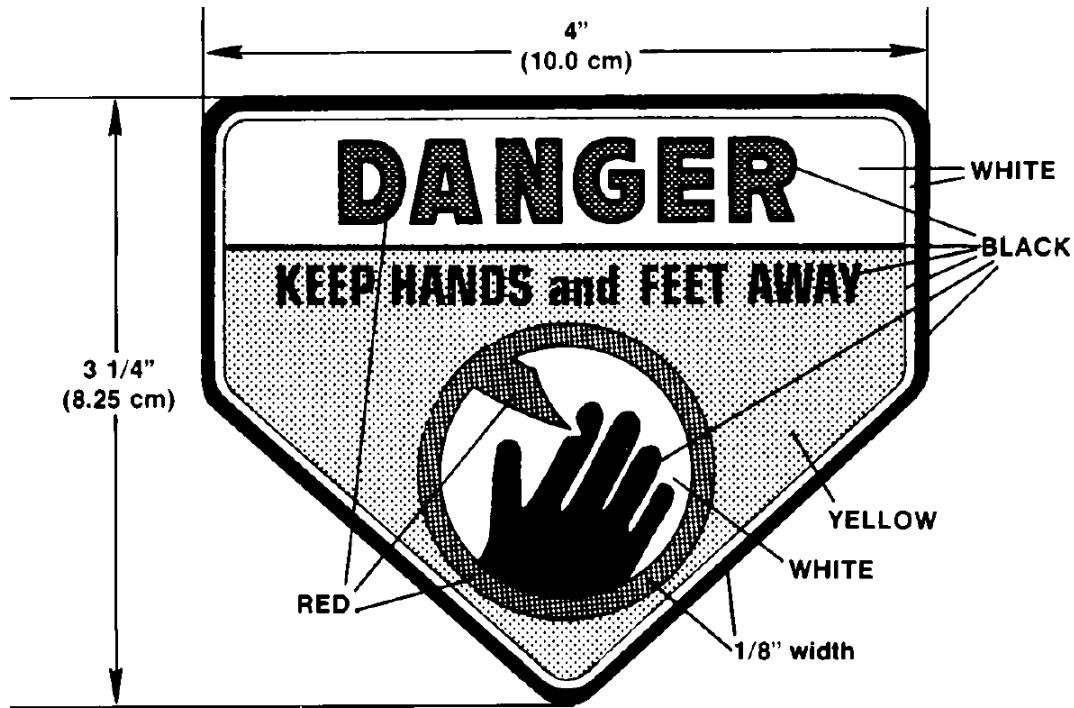


Figure 1. Walk-behind Mower Label

The Office of Compliance and Field Operations (EXC) enforces these mower requirements. Staff initiated a walk-behind mower program in FY 2017, inspecting 11 firms. EXC collected product catalogs and information about product testing, certification, and record-keeping required by the regulation. EXC also evaluated the labeling of products. Although some certification information was lacking on certain model types (generally electric mowers), all of the observed mowers displayed the required warning label near the discharge chute, or conspicuously on the mower housing.¹

EXC reviewed recall data involving walk-behind mowers for the period January 2014 through October 2019, and identified six recalls. Table 1 below sets forth the reasons for the recalls and the number of products involved.

¹ Walk-behind mowers are one of the products included in the FY 2020 mechanical products compliance monitoring program. Consistent with prior programs, EXC will be conducting inspections of firms and products and related materials to assess continued compliance.

Table 1. Walk-behind Mower Recalls

Company	Date	Reason	Approximate Number of Products
MTD	April 17, 2019	Thrown objects	5,000
Sun Rise Trading	May 2, 2017	Fire Hazard – circuit board	28,000
Husqvarna	October 18, 2016	Blade Control	235,000
Great States	May 28, 2015	Blade Control	1,200
Husqvarna	September 30, 2014	Blade Control	700
American Honda	January 15, 2014	Blade Control	20,800

Several of these recalls involved blade-control devices that may not have functioned as intended, which could lead to laceration or amputation injuries. These devices are required by § 1205.5 of the regulation and are intended to prevent blade-contact injuries by stopping the engine and/or the blade when the operator leaves the normal operating position. None of the recalls involved mowers that failed to display warning labels to alert the operator to the potential for blade-contact injuries.

In a recent import case EXC addressed, several walk-behind mowers were received at a U.S. port without the proper testing or certification. The walk-behind mowers were also missing the required warning label. EXC determined that the products were intended for shipment to Central America. The firm petitioned U.S. Customs and Border Protection for exportation to the intended foreign country. EXC has had no other regulated cases in recent history related to the use of the required warning label.

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TAB F: Market and Economic Considerations for Petition for Revision of 16 CFR part 1205 – Safety Standard for Walk-Behind Power Lawn Mowers



**UNITED STATES
CONSUMER PRODUCT SAFETY COMMISSION
4330 EAST WEST HIGHWAY
BETHESDA, MARYLAND 20814**

Memorandum

DATE: March 25, 2020

TO: Sharon White, Project Manager, Walk-Behind Power Lawn Mower Petition
Directorate for Engineering Sciences
Division of Human Factors

THROUGH: Gregory B. Rodgers, Ph.D.
Associate Executive Director
Directorate for Economic Analysis

Robert L. Franklin
Senior Staff Coordinator
Directorate for Economic Analysis

FROM: Susannah Proper
Economist
Directorate for Economic Analysis

SUBJECT: Market and Economic Considerations for Petition for Revision of 16 CFR Part 1205 – Safety Standard for Walk-Behind Power Lawn Mowers

Introduction

On February 19, 2019, the Commission docketed a petition (19-01) received from the Outdoor Power Equipment Institute (OPEI), requesting the Commission to revise the regulations in 16 CFR part 1205 governing walk-behind power lawn mower safety requirements. Specifically, the petition requests a regulatory change to allow an alternative pictorial-only warning label. The petition states that this regulatory change will “provide stakeholders” (assumed here to refer to mower manufacturers) “with an option to both modernize and globally-harmonize this important warning to consumers.” The petition also states that such a warning will “effectively communicate the subject warning to consumers, regardless of their spoken language or degree of literacy.”

This memorandum provides information on the market for walk-behind power mowers and the economic considerations related to the petition. The analysis is based on information that is

CPSC Hotline: 1-800-638-CPSC(2772) CPSC's Web Site: <http://www.cpsc.gov>

readily available, including information provided by the petitioner, public comments, and public websites of government agencies, as well as mower manufacturers and retailers.

The Products

The scope of 16 CFR part 1205 “Safety Standard for Walk-Behind Power Lawn Mowers” covers powered rotary mowers with a cutting width of at least 12 inches.¹ Reel-type power lawn mowers are also within the scope of the standard. They are not required to meet the performance requirements of the standard in 16 CFR part 1205, but they must have the safety label specified in §1205.6. The label is the subject of the petition.

Walk-behind power mowers currently available in the United States that meet this scope include gas-powered mowers, corded electric mowers, and battery-powered mowers. This analysis assumes that robotic mowers are out of scope. Although some available robotic mowers do have a cutting width of 12 inches, they do not meet the definition in the regulation, which defines a “walk-behind power mower” as “normally controlled by the operator walking behind the mower.”

Walk-behind power mowers for consumer use within the scope of the current regulation can be purchased at mower dealerships, home improvement stores, general retail stores, hardware stores, and internet retailers. Larger, more powerful mowers that are out of scope can be purchased by the general public, but they tend to be sold at exclusive brand dealerships or commercial landscaping retailers. The larger walk-behind mowers are generally marketed for commercial use or for brush clearing. Smaller-wheeled, grass-cutting tools with a cutting width of less than 12 inches, which are out of scope, are generally marketed as edgers or trimmers, rather than “mowers.” The current regulation states in 16 CFR § 1205.8(c) that “[t]he Commission estimates that at least 98% of the total annual market (by unit volume) for walk-behind mowers will be affected by the standard, and the Commission estimates that in 1978 this market was 5.4 million units.” As discussed in the next section, this is still a reasonable estimate for the size of the total market and for the amount of the sector impacted.

Prices for walk-behind power mowers range from about \$100 for a small corded electric mower, to more than \$1500 for a heavy duty, gas-powered brush mower, with most models costing between \$200 and \$600. Prices vary depending on size, brand, and features, such as mulching bags and speed controls. Within the same brand and power type, self-propelled (powered wheel) mowers generally cost more than push mowers. There is some overlap between the commercial and consumer market at the top end of the consumer price range.

¹ The current regulations specify that only mowers that are over certain size, weight, **and** power specifications are out of scope. Specifically, the regulation states: “Mowers that have all three of the following characteristics are not covered by the standard:

- (i) A cutting width of 30 in (762 mm) or greater,
- (ii) A weight of 200 lb (90.7 kg) or more, and
- (iii) For engine-powered mowers, an engine of 8 horsepower (6 kw) or more.”

Market for Walk-Behind Power Mowers

Manufacturers of mowers fit into the North American Industrial Classification Category 333112, “Lawn and Garden Tractor and Home Lawn and Garden Equipment Manufacturing.” This category includes manufacturers of many items that are out of scope of the petition, including snow-blowers, riding mowers, accessories and parts for mowers, and other lawn and turf maintenance products, such as aerators, dethatchers, and weed trimmers. The category also includes non-powered push mowers and other non-powered garden tools. The SBA size standard for this NAICS category is 1,500 employees. The U.S. Census Economic Survey from 2017 has 147 firms in NAICS 333112 with combined annual sales or revenue of \$8.622 billion, but CPSC staff estimates 15% to 20% of those sales were of walk-behind power lawn mowers, based on analysis of annual financial reports of publically traded major mower manufacturers and OPEI’s estimate of members’ sales. A CPSC staff analysis of mower brands offered at major home improvement chain stores and internet retailers in October 2019 identified three dozen manufacturers and importers selling more than 70 different brands of walk-behind power mowers.

OPEI states in its petition that its members “shipped 5.2 million walk-behind power lawn mowers” in 2018 in the United States, which it estimates is 95 percent of the U.S. market. That would make the total U.S. market for walk-behind power mowers 5.5 million units sold per year. (5.2 million is 95% of 5.5 million) CPSC staff’s review of retail websites finds that OPEI members include nearly all of the mower manufacturers that have more than 1,500 employees, as well as many of the smaller manufacturers and importers. Staff’s analysis of selected retail sites² also found roughly a dozen lawn mower manufacturers representing several dozen minor and private label brands that are not OPEI members, most of which meet the SBA category of “small” manufacturers and importers. The few large manufacturers that are not OPEI members are diversified international manufacturing companies for which mowers are not a major product line. Thus, OPEI’s statement that their members represent 95 percent of the U.S. market is a reasonable estimate of sales by unit volume, because all of the non-OPEI manufacturers and importers are either small businesses or large diversified companies that have a relatively small share of the U.S. mower market. Thus, we concur with OPEI’s estimate that the market size for walk-behind power mowers is approximately 5.5 million units per year. Note that this is substantially similar to the estimate for the findings for the 1978 regulation.³

As part of its non-road emissions model, the U.S. Environmental Protection Agency (EPA) estimates that there are 32.3 million gas-powered, non-riding lawn mowers with 1 to 11 horsepower engines in residential use.⁴ Adding an estimated 4 million electric and battery-

² Websites for major home improvement retailers, large general retailers, and internet mower retailers that sell multiple brands

³ Although the U.S. population has grown by 105 million persons since 1978, it is reasonable to assume that the mowable square footage of the United States has not increased commensurately.

⁴ <https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=P10081T6.pdf>. Page 23 “Base Year U.S. Population Estimates in Final NONROAD2008a”

powered mowers in use,⁵ yields a total of 36.3 million walk-behind power mowers currently in residential use. This implies a mower lifespan of 7 years, which is consistent with industry estimates of small engine life and the EPA regulations for small engine emission warranties.

Potential Impact on Manufacturers, Including Small Entities

The petitioner requests that the standard be modified to allow an alternative, non-text warning label. Because the existing warning label would still be allowed, no manufacturer or importer would be required to use the alternative. Therefore, one can assume that rational manufacturers would use the new label only if the expected benefits of doing so exceed the cost, and likely after exhausting their existing stock of the current label.

The change requested by the petition could reduce the cost to manufacturers in two ways. It could reduce the cost to manufacturers of labelling the lawnmowers, and it could reduce the cost of maintaining multiple distribution channels for the North American market.

If manufacturers chose to use the new warning label, they would have to manufacture new warning labels or purchase the new warning labels from suppliers. Custom label suppliers price labels based, in part, on the size of the label. The proposed alternative label uses the same color scheme as the currently required label, but it is less than half the size (10 centimeters x 4 centimeters, versus 10 centimeters x 8.25 centimeters). Therefore, the cost of the durable labeling material could be as much as 50 percent less than the cost for current labels. Multi-color custom ISO/ANSI-compliant warning labels with symbols cost about \$1.10 per label in large quantities for a label the size of the current required label, and cost about 60 cents per label for a label the size of the label proposed by the petitioner. So, if, for example, 5.5 million mowers have a label that costs 50 cents less than the current label, that would be an annual savings of \$2.75 million per year for the mower industry.

We estimate that it would take one hour of professional graphics expertise per lawnmower model to update the label itself. The rate per hour may be about \$70.03, which is the average employer cost of compensation per hour worked reported by the Bureau of Labor Statistics for June 2019⁶ for professional and related occupations in goods-producing industries. Many manufacturers have multiple models and brands. The website of a typical big box store or home improvement center has about 100 to 200 consumer-grade, walk behind power mower models available for sale. If 150 models are updated, the cost would be $150 \times \$70.03$, or about \$10,505. The redesign cost could be less, if an existing warning sticker for lawn tractors that already has the suggested alternative graphics could be modified, which appears to be the case for some U.S. manufacturers.

A majority of mower manufacturers and importers are small entities, per the SBA size standard of 1,500 employees for the relevant NAICS category. We do not anticipate an adverse impact on

⁵ California Air Resources Board survey of residential lawn and garden equipment found that 11 percent of power walk-behind lawnmowers in use in 2012, were electric.

https://ww3.arb.ca.gov/msei/2012_residential_lg_survey_updated_tables.pdf

⁶ <https://www.bls.gov/ncs/ect/>

small entities as a result of the action requested by the petitioner. First, the cost of labeling would decline. Second, no manufacturer or importer would be required to use the alternative label if they chose not to do so.

Currently, walk-behind power lawnmower manufacturers must comply with safety warning label requirements that are different in different countries, even within the North American market. For example, Canadian mowers have a safety warning label similar to U.S. mowers with the same graphic required by 16 CFR part 1205, but with additional text in French, as well as English. The pictorial-only sticker could potentially meet the safety warning label requirements of multiple countries, thus reducing distribution logistics costs for the manufacturers. We do not have the information to estimate the magnitude of those cost savings, but we believe those costs could be considerable, because the costs could include logistics, as well as label cost savings. The top five manufacturers by 2018 U.S. market share, together representing more than half of retail sales, are diversified multinational companies that manufacture and sell lawn equipment in multiple markets. Most of the large manufacturers also have multiple brands of mowers. Therefore, having a single global warning label could simplify logistics and reduce distribution costs. For example, a mower assembled in Mexico by a company headquartered in the United States could be shipped to Canada and the United States with the same warning sticker and Stock Keeping Unit, simplifying inventory control and reducing the need for leased warehouse distribution space in multiple countries. The continuing consolidation in the mower industry, as evidenced by the larger companies acquiring multiple previously independent brands, reflects the economies of scale of both manufacture and distribution of mowers, as well as the strong competition from manufacturers outside North America and relatively low margins. A single North American warning sticker could contribute to logistical efficiencies for manufacturers based in the United States.

Impact on Consumers

The petitioner asserts that the use of pictorial warnings is “essential to consumer safety,” noting that “in the United States alone over 300 languages are spoken, and across all global markets considerable numbers of consumers do not proficiently read any language.” The petitioner implies that using pictographs on warning labels without text warnings would ensure that all consumers are aware of the safety message, regardless of their language. In addition, the petitioner notes the benefit of a “globally harmonized” warning. The petitioner also states that the focus of the petition is “the effective use of pictorial warnings to help address the diversity of languages spoken in the United States.”

We do not have sufficient information to estimate whether the use of the alternative label would increase or decrease mower fatalities and injuries, or impact the societal cost of those fatalities and injuries. This is because we don’t know: (a) whether the alternative label would increase or decrease fatalities and injuries, and (b) to what extent, and how quickly mower manufacturers would adopt the alternative label.

The cost of the alternative warning sticker is not expected to raise or lower the price of the mower to consumers. None of the public comments on the petition raised concerns about the cost to consumers of the change proposed by the petitioner.

Sources:

California Air Resources Board

Euromonitor

U.S. Bureau of Labor Statistics

U.S. Census Economic Survey

U.S. Environmental Protection Agency

Websites for major home improvement chains in the United States and Canada, internet sellers of mowers, and various mower manufacturers

Consumer Reports, May 2019 “Most and Least Reliable Walk-Behind Lawn Mower Brands”

ANSI B71.1 “American National Standard for Consumer Turf Care Equipment – Pedestrian-Controlled Mowers and Ride-On Mowers – Safety Specifications.”

ISO 11684: 1995 “Tractor, machinery for agriculture and forestry, powered lawn and garden equipment – Safety signs and hazard pictorials – General principles”

Regulations.gov (for public comments on the petition)

TAB G: Public Comments

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**UNITED STATES
CONSUMER PRODUCT SAFETY COMMISSION
BETHESDA, MD 20814**

Memorandum

DATE: November 21, 2019

TO: Walk-Behind Lawn Mower Petition File

THROUGH: Rana Balci-Sinha, Ph.D., Director,
Division of Human Factors

FROM: Sharon White, Project Manager
Walk-Behind Power Lawn Mower,
Directorate for Engineering Sciences
Division of Human Factors

SUBJECT: Public Comments

On April 9, 2019, the Commission published a *Federal Register* notice¹, soliciting public comments on the petition. The comment period closed on June 10, 2019. The Commission received a total of 11 comments.² Consumers submitted nine comments. Representatives of interested organizations submitted two comments. Six comments support the petition. Four comments do not support the petition. One comment is outside the scope of the petition (it states that a far more significant health risk is pollutants from lawn mowers). Below, staff responded to comments that are relevant to the petition.

Pictorial-Only Warning

Comment

A number of commenters believe that a pictorial-only warning is easy to understand and may communicate a safety message to a wide range of users because pictorial-only warnings do not rely on written words to convey their meaning. These commenters contend that symbols can communicate safety messages to consumers who do not read English and who lack literacy skills. Therefore, these commenters assert that pictorial-only warning labels can help overcome language barriers.

¹ <https://www.govinfo.gov/content/pkg/FR-2019-04-09/pdf/2019-06841.pdf>

² <https://www.regulations.gov/docketBrowser?rpp=50&so=DESC&sb=postedDate&po=0&dct=PS&D=CPSC-2019-0007>

Response

Staff agrees that a pictorial-only warning may overcome language barriers because they do not rely on written words to convey their meaning. Pictorial-only warning labels offer the potential to communicate messages quickly across cultures with many languages and for the benefit of those who may be literacy challenged. However, pictorial-only warnings can be effective only if they are well understood. Staff believes that the petitioner's proposed pictorial-only warning is likely to be less effective, compared to the CPSC warning label, due to the likelihood that users may not interpret the meaning of the pictorial correctly and may not motivate behavioral change. Staff could consider the option of a different pictorial-only warning, however, the available data do not specify whether the blade-contact incidents were due to the inability of consumers to read and understand the required English warning. Additionally, the petitioner did not demonstrate the need for such a pictorial-only warning. Therefore, the available data do not suggest that a pictorial-only warning is even necessary. Staff also believes that the CPSC-required label, which contains both text and a pictorial, is likely to be more effective than the proposed pictorial-only warning.

Combined Text and Pictorial Warning

Comment

Several commenters acknowledged the merits of a pictorial warning. However, all of the commenters recommend that a warning should contain both text and a pictorial, in case consumers do not understand the pictorial's meaning.

Response

Staff agrees with the comments.