UNITED STATES GOVERNMENT

Memorandum

U.S. CONSUMER PRODUCT SAFETY COMMISSION

TO THE COMMISSION
THROUGH: Office of the Secretary DATE: APR 15 1988
THROUGH: Margaret A. Freeston, Acting General Counsel
THROUGH: Stephen Lemberg, Assistant General Counsel
FROM Harleigh Ewell, OGC

SUBJECT Walk-Behind Power Lawn Mowers: Thrown Objects -- VOTE SHEET

Attached is a staff briefing package seeking guidance on whether to continue work toward a mandatory standard to regulate thrown objects from power lawn mowers and a restricted memorandum from the Office of General Counsel concerning this issue.

Please indicate your vote on the alternatives given below. The alternatives of monitoring the voluntary industry standard development and ongoing injury data are not included since they do not require Commission approval and have been recommended by the Executive Director.

I. COMPLETE TECHNICAL WORK ON THROWN OBJECTS TESTS AND ACCEPTANCE CRITERIA.

_____ (Signature) _____ (Date)

II. STOP DEVELOPMENT OF MANDATORY THROWN OBJECTS RULE.

_____ (Signature) _____ (Date)

III. PARTICIPATE IN VOLUNTARY INDUSTRY DEVELOPMENT EFFORT.

_____ (Signature) _____ (Date)

IV. OGC SHOULD PREPARE FEDERAL REGISTER NOTICE (FOR APPROVAL BY BALLOT VOTE) EITHER:

A. EXTENDING TIME FOR ISSUING STANDARD OR WITHDRAWING PROPOSAL.

_____ (Signature) _____ (Date)

B. PROPOSING TO WITHDRAW PROPOSAL.

_____ (Signature) _____ (Date)

Instructions/Comments:

Attachment

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R. David Pittle (Signature) 4/30/81 (Date)

Instructions/Comments:

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(Signature) (Date)

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Edith B. Gilbert April 30, 1981
(Signature) (Date)

Instructions/Comments:

Attachment

[redacted] STATES GOVERNMENT

Memorandum

U.S. CONSUMER PRODUCT SAFETY COMMISSION

TO THE COMMISSION

THROUGH: Office of the Secretary DATE: APR 15 1981

THROUGH: Margaret A. Freeston, Acting General Counsel

THROUGH: Stephen Lemberg, Assistant General Counsel

FROM Harleigh Ewell, OGC

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(Signature) (Date)

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[signature] Apr. 30, 81
(Signature) (Date)

Instructions/Comments:

Attachment

UNITED STATES GOVERNMENT

U.S. CONSUMER PRODUCT SAFETY COMMISSION

Memorandum

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Sam Zagoria (Signature) 4/30/81 (Date)

Instructions/Comments:

Attachment

NOTE: This document has not been reviewed or accepted by the Commission.
Initial _____ Date _____

UNITED STATES GOVERNMENT

Memorandum

~~U.S. CONSUMER~~ PRODUCT SAFETY COMMISSION

TO : The Commission
Through: Office of the Secretary
Office of the General Counsel

DATE: March 27, 1981

FROM : Richard A. Gross
Executive Director

SUBJECT: Walk Behind Power Mowers: Thrown Objects

Attached is a briefing package seeking your guidance on whether to continue work toward a mandatory standard to regulate thrown objects from power lawn mowers. As you will see, six of eight offices and directorates making recommendations on this issue suggest that the project toward a mandatory rule be discontinued, although there are various suggestions that some related work be done. Given the varied, and somewhat conflicting, staff opinions on this matter, I thought it appropriate to briefly offer my own judgment on this issue.

I recommend that the Commission direct the staff to stop work on the mandatory thrown objects rule, but to continue to monitor the voluntary standards effort and the thrown objects injury data in the normal course. The factors which I look to in making this recommendation are the following:

1. The staff estimates that only about one mower user in forty-four will suffer any sort of thrown object injury in his lifetime. (Tab C, p. 3) Most injuries (80%) are suffered by users rather than bystanders.

2. Most thrown objects injuries (52%) are cuts, scratches, and bruises. (Tab B, p. 4) Most (41%) of the remainder involve puncture wounds from foreign bodies striking, and sometimes piercing the body. (Fourteen fatal injuries from thrown objects have occurred from 1973 through 1980.)

3. Since we estimate thrown objects injuries cost about $30 million per year and initial costs of compliance with a thrown objects requirement would be about $20 million per year, our standard would need to be more than 66 percent effective in eliminating such injuries in order for monetary benefits to exceed their cost. I doubt that we can predict such a result without substantial additional work.

4. Despite the considerable amount of work which has already been done to develop a thrown objects test, it is unclear that even substantial additional work will produce a test which can predict injury

April 1, 1981

1

reduction with sufficient accuracy. Key issues which remain to be resolved include (1) choice of test conditions which accurately simulate field conditions, (2) choosing pass/fail criteria (allowable number, direction or angle of "throws"), (3) developing a rationale for predicting the number of injuries that will occur from a given number of "throws," and (4) dealing with the prospect of a trailing shield which may mean initial compliance of a new mower with a performance standard but which falls off or is removed after a relatively short period of use.

5. The lawn mower industry is currently developing a voluntary performance standard for thrown objects similar to that developed for the Commission by the Research Triangle Institute (RTI). Although our technical staff disagrees with several features of this proposal and notes that several scheduled milestones have already slipped, I believe there is little reason to have confidence that a Commission standard which may begin to produce results in 1985 or 1986 will be significantly more effective.

For these reasons, and mindful of the Commission's current fiscal constraints, I believe resources that would be spent developing a mandatory thrown objects rule can be better utilized in support of more pressing priority projects of the Commission.

Attachment

UNITED STATES GOVERNMENT

Memorandum

U.S. CONSUMER PRODUCT
SAFETY COMMISSION
WASHINGTON, D.C. 20207

MAR 30 1981

TO: The Commission
THROUGH: Margaret Freeston, Acting General Counsel
THROUGH: Richard A. Gross, Executive Director
THROUGH: Bert G. Simson, Director, OPM
THROUGH: Carl W. Blechschmidt, Acting Program Manager, Powered Equipment Program, OPM

FROM: David Parrish, Project Manager, Powered Equipment Program, Office of Program Management

SUBJECT: Walk-Behind Power Mowers: Thrown Objects

The attached decision package requests that the Commission decide whether the hazard of thrown objects associated with walk-behind power mowers warrants continued expenditure of Commission resources. Most Offices and Directorates recommend that the project be discontinued, with some suggesting additional considerations. This package has been reviewed and approved by the Directorates for Engineering Sciences, Hazard Identification and Analysis, Compliance and Administrative Litigation, Field Operations and Health Sciences, and the Offices of Communications and Budget, Program Planning and Evaluation.

Attachment

*U.S. GOVERNMENT PRINTING OFFICE: 1974 733-533/3604 1-3

Decision Package

Power Mowers: Thrown Objects

Team Members:
M. Brady - Communications
R. Correia - Field
P. Galvydis - Compliance
R. Greenwald - Health Sciences
J. McNamara - Engineering
T. Murr - Planning/Evaluation
R. Newman - Hazard Analysis
D. T. VanHouten - Human Factors
W. Zamula - Economics

Powered Equipment Team
March 1981

ISSUE: Whether to continue the development of mandatory requirements to address thrown objects injuries associated with walk-behind rotary power mowers.

I. Present Status

Background: On May 5, 1977, the Commission published in the Federal Register (FR 42 23052) a Proposed Safety Standard for Power Lawn Mowers. This proposal included requirements (Tab A) intended to limit the objects thrown by both walk-behind and riding mowers.

Following publication of these proposed requirements, the Commission focused its resources on the reduction of injuries from contact with the moving blade of walk-behind mowers. These represented the greatest number of power mower injuries. Thrown objects requirements were withheld pending consideration of the numerous technical issues raised during the public comment period. On February 15, 1979, the Commission issued final requirements addressing blade contact injuries.

Limited work on thrown objects has continued. The Directorate for Engineering Sciences (ES) has addressed many of the technical issues that have been raised regarding use of the proposed test for walk-behind mowers. The Directorate for Hazard Identification and Analysis - Epidemiology (HIEA) has collected and begun the analysis of a representative sample of emergency room injuries treated during April-September, 1979.

Remaining Work: The following tasks have been identified as requiring completion before mandatory thrown objects requirements can be finalized:

1. Redrafting of testing requirements for proposal;
2. Testing of mowers to provide data for an injury model;
3. Completion of an injury model for projecting injury reduction;
4. Selection of pass/fail criteria;
5. Formal statement of the technical rationale for the standard, including documenting responses to public comment;
6. Development of final hazard and economic findings as required by section 9.(c) of the CPSA;
7. Preparation of a certification regulation: development, proposal, response to comments, promulgation.

Present projections are for approximately 4-5 staff years to prepare requirements for proposal and $10-15,000 for the purchase and testing of mowers for supporting the injury reduction estimates. Additional expenditure of resources would also be required in order to finalize requirements after reproposal. Approximately 18 calendar months would be required to propose requirements following a Commission decision to proceed with the project.

Purpose of the Package: Before the staff continues development of thrown objects requirements, it requests that the Commission consider

the magnitude and severity of the hazard and determine whether the project warrants continued expenditure of Commission resources. The staff has developed a description of the hazard, analyzed the effectiveness of voluntary industry requirements and described the approach that is planned if the Commission chooses to continue.

The Hazard: HIEA estimates (Tab B) that thrown objects injuries resulted in 11,800 hospital emergency room treatments in 1979. About 600 victims were hospitalized. An estimated two deaths occur each year.

Most injuries are not severe, but there is the potential for an occasional severe injury or death. Most victims are mower operators (about 80%). About half the operator injuries are puncture or foreign body injuries as opposed to lacerations, fractures, or abrasions; 10% of the puncture and foreign body injuries require hospitalization. The most serious injuries are usually head and torso injuries. An estimated 800 of these involved operators in 1979.

An estimated 2,000 bystanders were injured. About 1,000 bystanders suffered head and torso injuries.

The Economic staff (HICP) describes (Tab C) the relative risk of injury from a thrown object. With the present population of about 33 million mowers, and an equal number of mower users, 1 operator in 44 is likely to suffer a thrown object injury of any sort in the operator's lifetime. Although it is highly unlikely that any one operator (or bystander) will die or suffer a severe injury from a thrown object, deaths and severe injuries do occasionally occur.

Voluntary Requirements: The industry voluntary standard includes thrown objects requirements. Related design requirements are that a complying mower must have a rear trailing shield and that the mower deck must extend downward 1/8" below the plane of the blade except at the discharge chute. Thrown objects at the discharge chute are addressed with a performance test. For this test, the underside of the mower is sealed so that test projectiles exit out the discharge chute toward a target. ES feels (Tab D) that this performance test is inadequate because it displays little or no ability to discriminate between more and less safe mowers, and it does not simulate actual mowing conditions.

The industry also is involved in an effort to develop a thrown objects test similar to the test developed for the Commission by the Research Triangle Institute (RTI). This test would replace the thrown objects requirements in the voluntary standard. ES notes that the industry has chosen several test features which ES and RTI have discarded for sound technical reasons. Several scheduled completion dates for this test have already slipped and the staff cannot accurately project when completion might be expected.

Effectiveness of Voluntary Requirements: The existing voluntary requirements were introduced in 1972. HIA's analysis indicates that most of the effect of those requirements has already been realized since noncomplying mowers have largely been replaced by complying mowers. HIEA

estimates that mowers certified as meeting the voluntary requirements and produced since 1972 might have caused up to 27% fewer injuries than mowers produced before 1972. This estimate is very sensitive to assumptions regarding the useful life of a mower, which is used in estimating the numbers of mowers in use (Tab B, page 3, Issue (2)). With the assumption that mowers have a longer useful life, resulting in more older mowers in use in 1979, the analysis would show that post 1972 mowers have been no safer than mowers made before 1972.

The risk reduction observed is primarily in injuries to operators. The sample of bystander injuries is too small to permit evaluation of the effectiveness for that group.

HIEA notes that evidence of removed or broken safety devices in the injury reports suggests that the voluntary requirements might have further reduced the risk if trailing shields or discharge chute deflectors were attached and operational. For 5-8 year old mowers which were originally equipped with trailing shields, 85% of the trailing shields were removed or broken at the time of injury; 64% of chute deflectors were removed or broken (Tab B, Issue (2)).

Technical Approach: If the Commission decides that mandatory requirements for thrown objects should be completed, the staff is prepared to resume the effort that essentially ceased when attention was focused on blade contact injuries for walk-behind mowers.

The test proposed in 1977 was developed by RTI in an effort to merge all the best features of known tests. ES is confident that this test is the most practical method for simulating projectile ejection from mowers. A final test would be nearly the same as that proposed in 1977, with some changes made in response to public comment. The test would be used to test walk-behind mowers. There presently are no plans to pursue thrown objects requirements for riding mowers.

Acceptance Criteria: ES, with RTI support, has begun work for selecting pass/fail criteria for the test. Completion of this work would follow a Commission decision to proceed. ES describes several types of criteria that could be chosen and notes their present preference for criteria which 1) limit the number of test objects which can be ejected and 2) weight each hit according to where it strikes the walls of the test cell. The weighting would be based on the potential for injury from an object based on the object's exit location and the height at which the object strikes the test wall. The result would be a score which determines whether the tested mower passes or fails.

Forecasting Effectiveness: HIEA notes that quantification of the effectiveness of such a performance approach could be difficult. A criterion which allows no hits in certain regions of the target (such as at the rear of the mower) can be quantified readily since injury reduction could be estimated as 100% for injuries to persons in that region. However, if one or more hits are allowed, HIEA is concerned because the methodology for quantifying the injury reduction associated with one or more target hits has not been developed.

ES has begun development of a model for predicting injury reduction. Additional testing of mowers would support this model by describing more precisely the particular types of mowers tested and their scoring characteristics. The mowers will be selected to be representative of the most popular mowers in use. With this test information, and information describing the proportion of mowers in use that each tested mower represents, a projected range of effectiveness might be established. HIEA is concerned that the validity of this methodology requires conditions that will be difficult to meet (Tab B, Issue (4)).

Cost of Thrown Objects Injuries: Preliminary estimates show that, exclusive of pain and suffering, thrown objects injuries cost society on the order of $30 million per year. The cost for complying with thrown objects requirements would be on the order of $20 million per year during the initial period of the requirements. Costs would eventually decrease to a negligible level after initial expenditures for research by mower manufacturers are regained and complying mower designs are adopted. Additional shields or redesigned decks necessary for compliance would initially add about $4.00 to the retail price of a mower.

II. OPTIONS

1. Discontinue the Project: The number of thrown objects injuries, and particularly the number of severe injuries, is small relative to the large number of mowers in use and the frequent exposure of operators and bystanders to mowing situations. The Commission might decide that its limited resources could be better expended on projects with potential for addressing larger numbers of severe injuries.

Some important difficulties with the project are still to be overcome. It is presently uncertain to what extent injury reduction can be linked to this performance approach. Also, development of a certification regulation for such a complex approach could prove difficult and time consuming. While ES believes that it might be possible to write a simplified rule such as was written for the blade contact standard (testing the prototype, with additional testing only for design changes), enforcement has not yet been closely studied. The Directorate for Compliance and Administrative Litigation is not yet comfortable with the enforcement aspects of test reproducibility, the number of samples to be tested, and the significance of a pass/fail test criteria (Tab E).

If the Commission chooses to end the project, the staff would recommend that such a decision be made without any determination regarding the unreasonableness of the risk of injury from thrown objects. Testing to date shows that some mowers in fact throw more objects than others and the staff would not agree that a decision to discontinue the development of mandatory requirements could be the basis for concluding that all mowers presently manufactured are sufficiently safe.

Ending the project would mean that thrown objects injuries would be expected to continue at about the present rate. There would be little or no additional benefit expected from the present voluntary requirements.

2. Continue the Project: By continuing the project, the Commission can expect some reduction of thrown objects injuries after, perhaps, 1985 or 1986. Quantification of injury reduction cannot presently be made, and some difficulties are expected in the future quantification efforts. These difficulties are somewhat offset by the expected low cost of compliance and the design flexibility which is possible with such a performance test.

Much of the technical work for this project has been completed and a considerable effort still remains. Following the testing of the representative sample of mowers, the remaining effort would primarily involve staff time for information analysis, development of requirements for proposal, response to public comments and development and issuance of final requirements. Discontinuing the project would make resumption considerably more expensive if the Commission should make any future decision to address thrown objects injuries.

3. Rely on the current industry project to reduce thrown objects injuries. The mower industry is presently developing a test which is somewhat similar to the CPSC thrown objects test. The Commission could decide to end its mandatory proceeding and share the considerable staff expertise in order to contribute to the industry's efforts. If this development effort is successfully completed and incorporated into the industry voluntary standard, the Commission might expect to have some impact on thrown object injuries with considerably less expenditure of Commission resources.

However, ES believes that several of the industry's choices of test features will ultimately limit the effectiveness of the industry test. Since the staff's expertise has led it to different conclusions, and those differences are well known to the industry, involvement with the industry process might ultimately prove to be unproductive. The industry effort is technically farther from completion than the Commission effort and could be expected to take longer to develop. Ending the mandatory proceeding could remove the incentive for the industry to complete the development of its test.

Recommendations:

The Offices of Program Management and of Budget, Program Planning, and Evaluation and the Directorate for Field Operations recommend that the project be discontinued. With the Commission's limited resources, the uncertainty of being able to demonstrate the effectiveness of the project, and the delay until 1985 or 1986 before benefits would begin to accrue, the necessary resources might be better expended on projects representing greater risks and faster returns.

The Directorate for Hazard Identification and Analysis - Epidemiology recommends that the project be discontinued and that CPSC continue to monitor the injury data to evaluate the effect of any voluntary industry efforts on thrown objects injuries. This would involve a very low resource expenditure since it would be done in conjunction with monitoring blade contact injuries subsequent to industry's compliance with the Commission's blade contact requirements. This would not necessarily involve officially monitoring the voluntary standard.

The Directorate for Compliance and Administrative Litigation recommends (Tab E) that the Commission discontinue the development of mandatory requirements and monitor the development of voluntary requirements. They feel that the staff expertise should be shared, but that the resources necessary to complete the Commission effort could be better utilized elsewhere. Further, they believe that substantial problems could be encountered in enforcing a Commission requirement.

The Directorate for Engineering Sciences recommends (Tab E) that the Commission support the voluntary process at the participation level while completing the technical work on the CPSC thrown object test and acceptance criteria. It is their belief that such an effort would 1) provide a significant, technically supported contribution to the voluntary effort, 2) provide a basis for evaluating the hazard presented by specific mower designs, and 3) provide technical support for both comparative safety and education efforts to better inform consumers about the hazard.

The Directorate for Hazard Identification and Analysis - Economics recommends that the project be continued, but only if the test results can be translated into estimates of injury reduction. This would involve a decision to continue, with the remaining work to be divided roughly in half. The additional mower tesing and definition of acceptance criteria would be completed by ES; Epidemiology would describe the expected effectiveness; Economics would provide a preliminary assessment of the expected effects. This information would provide the basis for deciding whether to continue with the formal drafting of requirements for proposal, response to public comments, and issuance of final requirements.

The Directorate for Health Sciences suggests (Tab E) that the Commission might consider continuing the project and, when more data is gathered, consider whether it will be appropriate to focus on a few mower models in order to maximize benefits. The information is not presently available for determining whether such maximization would be appropriate, but it could be developed in a continued project with an expenditure that is on the same order as that required to complete mandatory requirements. That is, a future decision could be made in this regard without severely impacting the overall schedule for the project.

Attachments

Tab A Proposed Thrown Objects Requirements, May 5, 1977

Tab B HIEA memorandum dated February 10, 1981

Tab C HICP memorandum dated February 9, 1981

Tab D ESMT memorandum dated February 6, 1981

Tab E Additional Directorate Comments

The following related materials are available from the Office of the Secretary:

1. Thrown Object Injuries from Walk-Behind Lawn Mowers dated January, 1981.

2. Effectiveness of the ANSI Voluntary Standard in Reducing Thrown Object Injuries from Walk-Behind Power Lawn Mowers dated February, 1981.

3. Thrown Objects Test Comparison; Final Report Part I: Analysis and Evaluation dated January, 1977.

4. Power Lawn Mower Thrown Object Validity Study Final Report: Part IV dated July 1, 1980.

5. Thrown Object Hazard of Walk-Behind Power Lawn Mowers dated May, 1980.

6. Population Estimates for Walk-Behind Mowers dated January 2, 1981.

7. Population Estimates for Walk-Behind Mowers dated January 30, 1981.

8. HICP memorandum on the risk of injury from thrown objects dated February 4, 1981.

9. An Analysis of Thrown Objects: Compliance Costs vs. Injury Costs dated February, 1981.

§ 1205.4 Thrown objects test for rotary mowers.

(a) *Requirement.* Rotary power lawn mowers shall have a means to control and limit the ejection of objects struck by the rotating blade so that the criteria of paragraph (c) of this section will be met when the mower is subjected to the thrown objects test of paragraph (b) of this section.

(b) *Thrown objects test.* (1) *General description.* A test surface covered with artificial turf is surrounded by a target in the shape of an actagonal wall. While the mower is operating, 100 nails are injected upward into the blade from each of 3 injection points. The number and location of the nails that are propelled into the target determine whether the mower is adequately safe.

(2) *Test fixture.* The thrown objects test shall utilize the test fixture of Fig. 6.

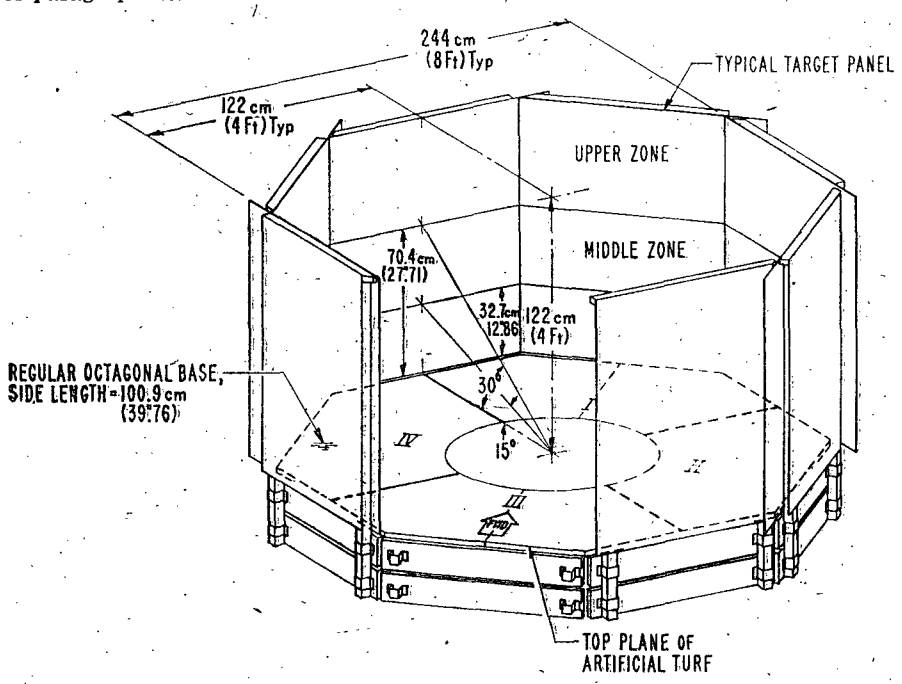

FIG 6-THROWN OBJECTS TESTER

(i) *Target.* (A) A target is provided to register the hits of any projectiles that are ejected from the mower housing during the test. The target consists of 8 panels, each 122 cm. (4.00 ft.) high and 100.9 cm. (39.76 in.) wide, arranged perpendicular to the base of the test fixture so as to form a regular octagon having an inscribed circular diameter of 2.44 m. (8.00 ft.). The panels shall consist of 350-lb. test corrugated board, double wall construction.

(B) The target shall be divided into 4 quadrants located to the front, rear, and both sides of the mower as shown in Fig. 6. The target shall be further divided into 3 elevation zones by two horizontal lines located at 32.7 cm. (12.86 in.) and 70.4 cm. (27.71 in.) above the top plane of the artificial turf on the test surface. These lines approximate the intersection of the closest portions of the target with angles of 15 degrees and 30 degrees extended from the center of the test surface and are referred to in this manner in the pass/fail criteria set forth in paragraph (c) of this section.

(C) Riding mowers shall be provided with an additional target (the "operator target") consisting of a circle of 350-lb. test corrugated board, double wall construction, 1 m. (39.37 in.) in diameter. This target shall be mounted horizontally 38.1 cm. (15 in.) above and centered over the point that is 15.25 cm. (6.0 in.) ahead of the heat reference point when the seat is in its most rearward position. The target may be relieved as necessary to clear the seat back, controls, or other parts of the mower.

(ii) *Test surface.* The surface over which the test is conducted shall be an artificial turf carpet (new Monsanto S-21 or equivalent) glued to a base of ¾ inch plywood. The surface of each quadrant of the test fixture shall be carpeted separately, with the nap of the artificial turf aligned away form the center of the test surface.

(iii) *Injection points.* (A) *Location.* Each blade of the mower is tested separately by being placed with its axis over the center of the test fixture and by having the projectiles injected one at a time into the rotating blade from 3 injection points, each located 2.54 cm. (1.00 in.) inside the blade tip circle and flush with the test surface. The injection points are located in the following angular positions.

(*1*) *Mowers with discharge openings.* When mowers with discharge openings are tested, the injection points shall be located as follows.

(*i*) Point 1: At the 12 o'clock position (center forward).

(*ii*) Point 2: At the position obtained by a line passing through the blade axis which is 45 degrees in the direction opposite the direction of rotation of the blade from a line between the blade axis and the center point of the discharge opening. However, if this position is within 15 degrees of point 1, then point 2 shall be 45 degrees from point 1 in the direction opposite to the direction of rotation of the blade.

(*iii*) Point 3: 180 degrees from Point 2.

(*2*) *Mulching mowers.* When testing mulching mowers, the injection points shall be located as follows:

(*i*) Point 1: The 12 o'clock position.

(*ii*) Point 2: 120 degrees from point 1.

(*iii*) Point 3: 240 degrees from point 1.

(*iv*) *Injection means.* (A) The injection means shall consist of a suitable piece of tubing having an inside diameter of 5/16 inch arranged perpendicular to the plane of the blade and having sufficient straight length to insure that the nails are injected vertically.

(B) The injection means shall inject the projectiles with a force that would, without a mower present, cause the projectiles to rise between 164 mm. (6.02 in.) and 305 mm. (12.01 in.) above the base of the artificial turf.

(v) *Projectiles.* The projectiles shall be sixpenny steel common nails as described in Federal Specification FF-N-105B(3) Oct. 4, 1974, (Para. 3.6.11.2, Type II, style 10—Common nails, bright, size 6d).

(3) *Test Conditions.* (i) The mower shall be placed on the test surface with its fore-and-aft axis aligned parallel to the arrow in Fig. 6.

(ii) The mower shall be operated at maximum operating speed with the blade engaged.

(iii) The mower shall be adjusted to its maximum cutting height.

(iv) The mower's shields shall be in place. If the mower is designed to be used with a grass catcher the mower shall be tested both with and without the grass catcher in place.

(4) *Test procedure.* (i) Each blade of the mower shall be tested separately.

(ii) The axis of the mower blade under test shall be over the center of the test surface.

(iii) One hundred projectiles shall be injected at each injection point for a total of 300 projectiles. Projectiles shall be injected one at a time with the head first.

(iv) Any indentation or perforation of the corrugated board target caused by a projectile shall be recorded as a hit in the appropriate target window.

(c) *Pass/fail criteria.* A mower passes the thrown objects test if all of the following occur:

(1) Not more than 149 of the injected objects hit anywhere on the target.

(2) Not more than 49 of the injected objects hit the target above the 15 degree line and not more than 14 of those hits are above the 30 degree line.

(3) Not more than 104 hits are in the right quadrant.

(4) Not more than 74 hits are in each of the front, left, and rear quadrants, except that for walk-behind mowers, no hits are allowed in the rear quadrant above the 30 degree line and not more than 1 hit is allowed in the rear quadrant below the 30 degree line.

(5) For riding mowers, not more than 1 hit is in the operator target.

UNITED STATES GOVERNMENT

Memorandum

U.S. CONSUMER PRODUCT SAFETY COMMISSION

TO : Carl Blechschmidt, OPM
Through: Dr. Robert D. Verhalen, DAED, Epidemiology

DATE: February 10, 1981

FROM : Rae Newman/Barbara MacDonald, HIEA

SUBJECT : Thrown Objects Briefing Package

ISSUE (1)

What is the present magnitude of thrown object injuries for walk-behind mowers?

DISCUSSION

We estimate that 11,800 thrown object injuries from walk-behind mowers were treated in hospital emergency rooms in 1979, based on a NEISS Special Study during April 15 to September 15 that year. These emergency room treated injuries translate into about 30,000 medically treated thrown object injuries for walk-behind mowers in 1979. Another NEISS special study in the summer of 1980 (May 15 to August 15) provided approximately the same estimates for thrown object injuries in 1980.

The Commission has 14 reports on file of deaths which occurred from 1973 through 1980 due to thrown objects from walk-behind power lawn mowers. Seven of these 14 deaths were due to punctures of internal organs such as the heart, brain, and stomach; six deaths were due to loss of blood from cerebral hemorrhages or severed veins and arteries; one death was due to a fractured skull. The projectiles were primarily sharp objects (9 cases) such as pieces of wire, nails, or glass; rocks were responsible for two deaths. Based on these reports from the Death Certificate data base, the Injury or Potential Injury Incidents file, and the In-Depth Investigation data base, it was estimated that approximately two thrown object deaths occur each year.

ISSUE (2)

Will the industry voluntary requirements reduce injuries?

DISCUSSION

In a Special Report prepared by HIEA in February of 1981[1/] it is estimated that the American National Standards Institute (ANSI) voluntary standard for 1972 and later years has resulted in an estimated 27 percent less injuries in mowers certified to the ANSI voluntary standard between 1972 and 1979, than in mowers not certified by Outdoor Power Equipment Institute (OPEI). This estimate is based on injury estimates from a NEISS special study in 1979 and an HICP estimate of the number of mowers in use which indicated a total of 32 million lawn mowers in use in 1979.

This injury reduction is primarily attributed to a reduction in injuries to mower operators, the group involved in 8 of 10 thrown object injuries reported in the 1979 survey.

For mowers purchased prior to the 1972 voluntary standard, the injury rate due to thrown objects from walk- behind mowers was estimated to be:

- o Operator — 3.8 injuries per 10,000 mowers in use
- o Bystander — <1 injury per 10,000 mowers in use

According to industry claims, 90 percent of the lawn mowers produced since 1972 have been certified to the 1972 or later voluntary standard. For mowers purchased during this eight year period (1972-1979), the injury rate from thrown objects for walk-behind mowers was estimated to be:

- o Operator — 2.8 injuries per 10,000 mowers in use
- o Bystander — <1 injury per 10,000 mowers in use

Based on this analysis of the 1979 data, it was estimated that the risk of operator injury had decreased by 29 percent, but the sample of bystander injuries was too small to measure changes in risk.

1/ Rae Newman and Barbara MacDonald Effectiveness of the ANSI 1972 Voluntary Standard in Reducing Thrown Object Injuries from Walk-Behind Power Lawn Mowers,(CPSC February 1981)..

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During the risk analysis,[1/] it became apparent that the risk estimates were extremely sensitive to the estimates of the number of mowers in use provided by HICP (Attachment A). In a model using a gamma distribution with an expected useful life of eight years and a shape parameter K=2.5, the total mowers in use in 1979 was estimated to be 39 million, seven million higher than the estimate used in HIEA's final analysis. However, 21 percent of those mowers were estimated to be pre 1972 mowers compared to 16 percent in the model used in our final analysis. In other words, the model estimating 39 million mowers in use in 1979 predicts many more older mowers in use that year. The effect of this hypothesis is that the rate of operator injury in mowers produced prior to the 1972 standard is lowered (2.4 injuries per 10,000 mowers in use) and the rate appears not to have changed due to the industry voluntary standard requirements for mowers purchased between 1972 and 1979 (2.5 injuries per 10,000 mowers in use).

Certification to the voluntary standard implies the presence of safety devices such as rear trailing shields and discharge chute deflectors. These devices were reported in more than two-thirds of the 1 to 4 year old mowers, and less frequently in each group of older mowers. Removal or breakage of these devices was noted to increase with the age of the mower involved in the accident. Without exposure data, the effect of damage or removal of the trailing shields or discharge chutes cannot be quantified, but it seems reasonable to conjecture that requirements to prevent removal and improve the durability of these devices might increase the effectiveness of the voluntary standard.

CONCLUSION

Taking into account the sensitivity of the risk estimates to the hypothetical model used to estimate the mowers in use, the effectiveness of the 1972 voluntary standard in reducing thrown object injuries for walk behind power mowers could be estimated as ranging from 0% to 27%: a 0% to 29% reduction in operator injuries and a 0% reduction in bystander injuries.

Evidence of removed or broken trailing shields or discharge chute deflectors in the injury reports suggests that the effectiveness of the voluntary standard might be higher if these safety devices were attached and operational.

1/ Rae Newman and Barbara MacDonald, op. cit., page 4.

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ISSUE (3)

What is the nature and severity of thrown object injuries?

DISCUSSION

Puncture or foreign body was the diagnosis for 41 percent of all thrown object injuries; for operators this accounted for 48 percent of the injuries whereas it was only 11 percent of the bystander injuries. The rate of hospitalization was high for punctures and foreign body injuries: one of every 10 cases was hospitalized. Injury reports of hospitalized cases described the surgical removal of wires which had become embedded in the leg or foot. Punctures of the head, heart, abdomen and chest were the cause of death in half of the 14 mortalities reported.

Laceration/avulsion was diagnosed in 37 percent and contusion/abrasion in 15 percent - a total of 52 percent of all thrown object injuries; for operators these accounted for 45 percent of the injuries but for bystanders both diagnoses occurred more frequently totaling to 79 percent of the injuries. The only hospitalizations for these diagnoses involved contusion/abrasion of the eyeball resulting in one victim's permanent partial loss of vision. Hospitalization was reported in 1 percent of all contusion/abrasion injuries.

Fracture or hemorrhage of the head or neck was diagnosed in four percent of all injuries; these accounted for four percent of the operator injuries and five percent of the bystander injuries. While these types of head injuries occurred infrequently, they were serious; a depressed skull fracture required hospitalization in one of these cases and hemorrhages were the cause of death in 6 of 14 deaths reported between 1973 and 1980.

The remaining three percent of the injuries were diagnosed as hematoma of the leg or foot, with similar percents reported for operators and bystanders. Hospitalizations were not required for any of these injuries.

A comparison of diagnoses of operator injuries was made between thrown object injuries from mowers certified as complying to the ANSI 1972 voluntary standard and those from mowers not certified by OPEI. The types of injuries resulting from certified mowers were similar to those resulting from non-certified mowers.

ISSUE (4)

Discussion of how the model predicts expected injuries as a function of Research Triangle Institute (RTI) mower test scores and a discussion of the validity of the model.

DISCUSSION

A. Validity of Model

In order to predict the expected number of thrown object injuries from power lawn mowers (or estimate injury reductions) the following conditions must be met by the model.

- The universe of mowers tested must be matched to the universe of mowers involved in reported injuries. Since the RTI testing began with 1976 and 1977 mowers, and it is anticipated that additional testing would involve more recent mowers (1979 and 1980), the model should use injury data involving 1976 to 1979 mowers (or 1980 if obtained).

- The sample of mowers tested must represent all the mowers in the universe of interest. (The RTI scores of mowers tested were so variable that this assumption may be difficult to support.)

- The number of mowers in use for each type of mower tested must be estimated in order to compute injury reduction. This requires exposure data by type of mower by year, information that is not easily obtained.

- In order to correlate a reduction in total target hits with a reduction in injuries, operator and bystander injuries must be weighted. The correct weight is associated with the mix of mowers in use during the period of interest and would be difficult to identify. A more direct approach of correlating injury reduction in the operator zone separately from injury reduction in the bystander zones would be easier to validate.

B. Predicting Estimated Injuries

1. Rear Quadrant Injuries

- For injuries in 1 to 4 year-old mowers (1976-1979 vintage), 84 percent occured in the rear quadrant, primarily to mower operators . In order to quantify injury reduction, the Pass/Fail requirements for RTI target hits would have to be correlated in some way with the percent of injuries in these cells by angle of hit, as shown below:

Rear Quadrant Injuries

Angle of Trajectory	All injuries	(Head or Torso Injuries)	Pass/Fail RTI Score
$\leq 15^{o}$	63%	(0%)	0-1
16^{o}-30^{o}	13%	(0%)	0
$>30^{o}$	8%	(7%)	0
Total	84%	(7%)	0-1

- If no hits were allowed in the rear target area, obviously all 84 percent of the injuries could be eliminated. If no hits were allowed above the 30^{o} angle, 8 percent of the injuries would be eliminated; this included all head and torso injuries in the rear quadrant (7 percent). (Note: The limitation of the target height to 4 feet ignores nails that could cause head injuries. Changes in the target height are suggested). If no hits are allowed in any zone except the lowest one -$\leq 15^{o}$, and 1 hit is allowed in that zone, some means of quantifying injury reduction from 63% is required.

- In order to correlate injury reduction with test scores, more testing information would be required. If certified and non-certified mowers or mowers with and without trailing shields were tested in the laboratory, it might be possible to correlate that data with operator injury data used to predict the effectiveness of the voluntary standard. The RTI scores of the mowers tested to date do not provide the information necessary to quantify injury reduction.

2 - Right, Front and Left Quadrant Injuries

- For injuries in 1 to 4 year-old mowers, 16 percent occurred in the right, left or front quadrants. This information is based on 12 cases:

Right, Front and Left Quadrant Injuries

Angle of Trajectory	All Injuries	(Head or Torso Injuries)	Pass/Fail RTI Score
$\leq 15^{o}$	12%	(7%)	?
$>15^{o}$	4%	(0%)	?
Total	16%	(7%)	?

- For bystander injuries, eliminating injuries in the higher angles would not eliminate all the head or torso injuries. While this sample is small, data from other time periods suggest that head injuries occur at all angles in the bystander quadrants. A score of zero hits could reduce bystander injuries by a total of 16 percent, but any other score can not be interpreted at this time.

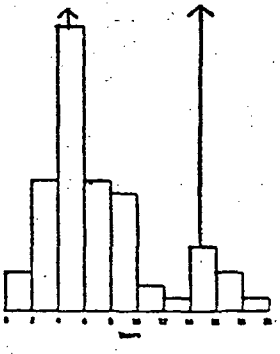
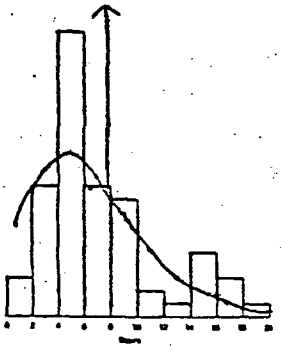
CONCLUSION

While it may be possible to estimate injury reduction using the scores of the RTI mower tests, additional work is necessary both in testing mowers and in developing the methodology for estimating injury reductions by correlating scores other than zero hits with appropriate injury data. The injury data for bystander zones are limited, but the maximum estimated reduction achievable in those zones is 16 percent. On the other hand, injury data for the operator zones are available and the potential injury reduction to be achieved there is 84%.

Attachment A.

Table 4: Comparison of Risk of Operator Injury Based on Two Methods of Estimating Mowers in Use

(Thrown Object Injuries from Walk Behind Power Lawn Mower)

	Method A		Method B
Hypothetical Distribution of expected useful life of mower 1/	Empirical	Bimodal	Gamma Distribution
	5-6 years	15-16 years	8 years
			
Estimated Mowers in Use in 1979 Total	32,540,000		39,063,000
Pre 1972 Voluntary Standard (9 + years old)		16%	21%
Risk of Operator Injury by Age of Mower 2/	(Injuries per 10,000 mowers in use)		
9 + years old (Pre 1972 Voluntary Standard)	3.8/10,000		2.4/10,000
5 - 8 years old	2.9/10,000		2.2/10,000
1 - 4 years old	2.8/10,000		2.7/10,000
Estimated reduction in risk of operator injury attributed to 1972 Voluntary Standard		29%	0%

Source: U. S. Consumer Product Safety Commission
Rae Newman/Barbara MacDonald, Special Report: Effectiveness of the ANSI 1972 Voluntary Standard in Reducing Thrown Object Injuries from Walk-Behind Power Lawn Mowers, February 1981

1/ Estimated from Empirical Bimodal Distribution Market Facts Survey, 1979, HICP

2/ Estimated from NEISS Emergency room based Special Study April 15 - September 15, 1979, HIEA

Attachment

bcc:
Central File
Reading File
Chron
R. Verhalen
R. Frye
C. Nicholls
R. Newman
B. MacDonald

HIEA:RNewman/BMacDonald:pd:2/10/81

UNITED STATES GOVERNMENT

Memorandum

U.S. CONSUMER PRODUCT SAFETY COMMISSION

TO : Carl W. Blechschmidt, EX-P

DATE: February 9, 1981

Through: Walter R. Hobby, DAED, Economics

FROM : William W. Zamula, HICP WZ
Ellen D. Tillman, HICP ET

SUBJECT: Thrown Objects Briefing Package

Attached is our contribution to the Thrown Objects Briefing Package as requested in your memo of December 8, 1980. The analyses on which it is based are also attached and are listed below:

1) Memoranda on "Population Estimates for Walk-Behind Mowers" dated January 2, 1981 and January 30, 1981.

2) Memorandum on the risk of injury from thrown objects, February 4, 1981.

3) Analysis of Thrown Objects: Compliance Costs vs. Injury Costs, February 5, 1981.

The responses to the issues you asked us to address follow:

1) Issue: What would be the expected risk of injury once the voluntary requirements have reached their maximum effectiveness.

Discussion: The attached table shows the risk of injury from thrown objects in 1979 and in 1990 when the voluntary standard will have reached its maximum effectiveness.

Conclusion: Most of the reduction in the risk of thrown objects injuries resulting from the voluntary standard has already been realized, and we project only a slight further reduction in risk through 1990.

2) Issue: What are the economic losses due to thrown objects injuries?

Discussion: We estimate economic losses from thrown objects injuries in 1979 as $30 million without including estimates of the costs of pain and suffering and $66 million if pain and suffering is included. The expected annual economic loss per mower from thrown

objects injuries is about $.90 (without pain and suffering) and about $2.00 if a valuation of pain and suffering is made. The voluntary standard will not reduce injuries enough to affect these estimates significantly.

3) Issue: What is the projected cost for manufacturers to comply with the mandatory requirements including capital costs and costs of research and development?

Discussion: Capital costs and costs for research and development for a thrown objects performance standard are difficult to predict. The design solutions could entail relatively minor tooling costs for shields or baffles or hundreds of thousands of dollars for a brand new mower deck. The expenses associated with testing and tooling will probably reduce the competitiveness of the small firms relative to the larger firms, unless they already comply with contemplated requirements.

In the first several years of compliance, the retail price impact of mandatory requirements is expected to be about $4, but over the long run costs, and therefore retail price impacts, are expected to decline. Effectiveness levels necessary to generate an excess of benefits over the retail price impact under certain assumptions are shown in "Analysis of Thrown Objects...", Table 2.

Attachment

Risk of Injury from Thrown Objects: 1979 and 1990

	1979	1990
Mower Population	32,500,000	36,500,000
Expected Useful Life	7 years	7 years
Mower Usage Per Session	75 minutes	
Cutting Time Per Year	31.25 hours	
Mower Lifetime Cutting Time	220 hours	220 hours
Total Uses in U.S.	.8 billion	.9 billion
Total Hours of Use Per Year	1 billion	1.1 billion
Mower Population/Users	1/1	
Consumer's Lifetime Use	25 years	
Mower Uses Per Injury	27,000	28,000
Hours Usage Per Injury	33,000	34,000
Annual Injuries/Mower	1/1100	1/1130
Lifetime Likelihood of Thrown Object Injury	1/44	1/45

Source: Economic Analysis, February, 1981

UNITED STATES GOVERNMENT

Memorandum

U.S. CONSUMER PRODUCT SAFETY COMMISSION

FEB 6 2 [illegible] '81

TO : David Parrish, Project Manager
Thru: James I. Price, Director, ESMT

DATE: 6 FEB 1981

FROM : James McNamara, ESMT

SUBJECT: Power Lawn Mower Thrown Object Project

The attached material provides the responses to issues requested for the Thrown Objects Briefing Package from Engineering Sciences. These responses have been prepared to provide part of the overall information identified as necessary to a Commission assessment of the present risk of injury due to thrown objects and viable actions which could address this hazard.

Attachment

Report on

Engineering Issues Associated with Assessment of the Thrown Object Hazard of Walk-Behind Power Mowers and Viable Actions to Address the Hazard

by

Ralph Madison

Roy Deppa

Directorate for Engineering Sciences

U.S. Consumer Product Safety Commission

January 1981

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Executive Summary

As discussed in the OPM strategy memo of December 8, 1980 and two ESMT memos of January 5, 1981, and January 13, 1981, ES was asked to address four issues related to the validity, status and use of the CPSC developed thrown objects performance test. This report contains the discussion of and the ES conclusions regarding these issues.

To summarize, ES feels that the test developed by Research Triangle Institute is valid and accurately simulates real conditions. ES also feels that a number of statistical models which link test scores to injury rates can be developed. The choices of mechanical features such as the use of nails, artificial turf, projectile injection, etc. were based on sound technical considerations and they represent the better features of a number of test methods. If the Commission decides it is necessary to pursue the establishment of a mandatory standard to address thrown objects injuries, the RTI test provides the best technical basis for a standard. Should the Commission decide not to continue toward a mandatory standard, but wants a method to discriminate between mowers marketed under a voluntary standard, or wishes to monitor the effects of a voluntary standard on injury levels and needs a test to link injury rates to design features of mowers, the RTI test has, in comparison to other tests available, demonstrated that it could validly be used for any of these purposes.

Technical work remaining involves final redrafting of the test, a limited test program using the revised test to provide data for an injury model, developing the model and formal writing up of the rationale for a standard, including formal response to public comment.

Discussion of Issues

Issue: Discuss how the model predicts expected injuries as a function of mower test scores and discuss the validity of the model.

Discussion

To give a range of options, three different methods for establishing safety criteria for mowers are discussed briefly. A refinement of the last method is also included as a fourth option. The rationale for the first method (to prohibit thrown objects in the operator zone) is based on the fact that 80% of all injuries occur to the operator of the mower. In theory, at least, this criterion could eliminate 80% of all injuries from thrown objects. The rationale for the second method (to prohibit thrown objects above a certain elevation) should reduce the more serious injuries to the head and trunk. The third option (to assign different weights to objects dependent on their direction and elevation and to set a limit on the weighted sum of objects thrown in test) is based on an extension of the rationale of the first two options in that it allows control over both operator and bystander injuries and can lead to overall injury reduction. To set the test score limit and to show its relation to injury reduction requires knowledge of operator and bystander positions at time of injury (available from existing IDIRs) as well as knowledge of the thrown object patterns (direction and elevation) for typical mowers in use (additional testing is required). Of these three options, ES prefers the third. The fourth option extends the last option to include consideration of the severity of injury based on part of body hit and velocity of the projectile. These refinements are not absolutely necessary. If they are to be made, they would require considerable analytical work and the existence of certain basic data.

A. Test requirement based on restricting the number of objects thrown into the operator zone.

This is probably the simplest model. Approximately 80% of all thrown object injuries are to the operator. If all objects thrown to the rear of the mower (operator zone) could be eliminated then, in theory, only 20% of the total injuries (injuries to bystanders) would remain. If the requirement for passing the test were that no objects be thrown into the operator zone, then this would be a fairly good guarantee, but not a perfect guarantee, that almost all operator injuries would be eliminated. The test requires injection of 300 nails into the mower housing. Even if none of these nails are thrown into the operator zone, one cannot be certain the 301st nail might not be. The probability would be small, but, nonetheless, finite. RTI has argued at least one hit in the operator zone ought to be allowed because of the small but real possibility that an object thrown into the bystander zone could bounce off the target and be reflected back to hit the target in the operator zone. A bigger problem (and very likely a problem with other options) is that if the industry tries to meet the requirement by the use of trailing shields attached to the rear of the mowers, then experience has shown that a sizeable proportion of these shields become ineffective because they are broken and not repaired or because they are deliberately removed by the operator. To the extent this happens, operator injuries would not be reduced. Finally, one has to recognize that while operator injuries are the large majority of injuries, the typical bystander injury is more serious. Proportionately, few operator injuries occur above the waist.

This pattern of operator injuries is reasonable given the nearness of the operator to the mower. Bystanders tend to be hit more frequently in the head and torso because bystanders are generally found at a greater distance from the mower and, thus, they are more vulnerable to thrown objects with a rising trajectory.

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B. Test requirement based on a model restricting the number of hits on the target above a certain height.

In order to address these more serious injuries, it is possible to define a region on the target above some specified height, such that a hit in this area would have a high chance of injuring a bystander in the torso or head were a bystander to be present and in line with the object. To protect against this type of injury, the requirement for a mower would be no hits (or some specified low number of hits) allowed in this area. (Clearly, this test requirement can be combined with the previous one to create another option). As before, there would be no absolute guarantee that all serious injuries would be eliminated by this test requirement. Not all bystanders are standing --- some may be sitting or may be children playing on the ground. These bystanders would be vulnerable to serious injuries from objects with low trajectories. This option, as well as the previous one, can be developed with minimal effort.

C. Test requirements based on a model using weighted test score which can be related to thrown object injuries.

An obvious extension of the above two options is to assign weights to hits in various sections of the target and to compute a total score as the sum of the weighted hits. The weights used would relate the potential of the hit in a particular section of the target to an injury in a real life mowing situation. To illustrate this approach, it is known that about four times as many operators are injured as bystanders. On tests made by RTI of 13 different types of mowers, it was found that over 90% of the hits are in the bystander zones of the target and less

than 10% are in the operator zone. If it is assumed every hit in the operator zone represents an injury to the operator, it follows that, on average, 36 hits in the bystander zone represents an injury to one bystander. (For every 36 hits in the bystander zone there will be on average, four hits in the operator zone --- a 9 to 1 ratio on target hits. Since the four hits in the operator zone would represent four operator injuries, the 36 hits in the bystander zone would represent one bystander injury -- a 4 to 1 ratio for injuries). By a similar type of analysis, it is possible to divide hits above and below a horizontal line on the target in the bystander zone. Hits in these two areas can then be weighted to reflect the observed differences seen in the number of bystander injuries which are known to be caused by high and low thrown objects.

Once relative weights are established, a weighted test score can be determined for a mower. The next step is to relate this score to the projected number of emergency room injuries. This is not terribly complicated, but it is difficult to explain fully in a brief paper. The gist of the approach, however, can be illustrated.* Suppose, as a hypothetical case, weighted test scores for a representative sample of mowers had been determined and that the average score was 100 and the scores ranged from 50 to 200. Suppose there was additional information that there were twice as many mowers in use with a score of 200 than for mowers with a score of 50. It follows that an individual mower with a score of 200 has four times the injury potential as one with 50 and,

* The approach described differs somewhat from the approach proposed by RTI in Ref. 2.

because there are twice as many in use, mowers with the 200 score would be expected to cause 8 = 4 x 2 times the number of injuries. By extension of this argument, the proportion of injuries due to each mower test score in the sample can be determined. Once this step has been completed it is then possible to examine alternative pass/fail requirements for mower test scores. For example, it might be that mowers in the upper 25th percentile on scores represent 40% of the mowers in use and contribute 50% of all reported injuries. If the pass/fail requirement were set at the 25th percentile score then, in time, this 40% of the mowers would be replaced by mowers with lower scores which, while still producing injuries, produce them at a lower rate. The overall injury reduction, once replacment were completed would be something less than 50% and might be on the order of 35%.

Development of this approach to establish pass/fail score requirements would require testing something on the order of 20 additional mowers (to be combined with the 13 already tested) and it would require frequency of use information. The Commission has on hand reasonably good sales volume information on many models of mowers and this information should be valuable in establishing use frequencies.

D. Test requirements using the RTI model with additional refinements.

The RTI approach does not distinguish between a hit to the eye and a hit to the leg -- both are scored equally. Since a projectile likely to hit the eye would hit the target in a different area than a projectile likely to hit the leg, the weights assigned to each target area can be further adjusted to reflect seriousness of injury.

The RTI approach does not take into account that objects can be thrown with different velocities. In truth, velocities vary. Limited measurements made by RTI of nails ejected from the discharge chute showed a range of values. Since projectiles with high velocities are more likely to penetrate skin at the time of a hit than those with low velocities, it might be possible to adjust test scores accordingly to reflect these probabilities. While ES believes that the model could accurately link test socres to injury rates without a refinement to address the issue of velocity, one approach which might be considered would be an attempt to establish projectile velocity as a function of the projectile's elevation as it exits the mower. The rationale is that a projectile, when it leaves the mower and bounces off the turf but remains at a low elevation, has a relatively high velocity since it loses less of its energy than one which hits the turf at a sharper angle and is bounced to a higher elevation.

If it is believed desirable to refine the RTI method in this manner, then additional velocity measurements would be required. Skin penetration as a function of projectile velocity and projectile cross sectional area might be obtained from, for example, existing shrapnel studies done by the Army.

Issue: Discuss the rationale which supports the RTI test as a valid simulation of real-life mowing situations, including a discussion of the use of various features such as nails, artificial turf, injections vs. pickup, and the measurement of distribution but not velocity.

Discussion:

A key factor in the development of the RTI test has been the desirability of basing the thrown objects standard on a performance test which would accurately discriminate between passing and failing mowers in a manner which is both repeatable and reproducible. To keep the test as objective as possible, it is necessary to reproduce or simulate real situations or conditions, but to make the test reproducible, it is necessary to standardize the mechanics of the test wherever possible. Thus, while real thrown objects injuries occur with a random selection of materials over various turfs and other harder surfaces, the test uses standard size nails injected by air pressure, over an artificial turf substrate. Each of the features was selected during the development of the test on the basis of providing standardized conditions, but the assumptions made about the accuracy of their representation of real life are readily defensible on technical bases. Few of the requirements of the RTI test are peculiar to that test. Most were incorporated in one or more of the other tests considered, and were adopted by RTI on the basis of their merits. Ref. 3 describes in some detail the extensive efforts in evaluating organized test procedures from a number of voluntary standards groups. The information generated in these evaluations provided

the groundwork for the development of the RTI test. To summarize, ES believes the proposed thrown object test provides both a practical and a reasonable simulation of the thrown object hazard encountered in real mowing situations. We believe the use of air pressure to inject objects into the mowing blades, the use of standardized nails as a surrogate for all thrown objects and/or use of an artificial turf carpet as substrate are supportable. We further believe the target material and configuration to be an adequate mechanism to record the frequency and direction of thrown objects.

Ref. 3 further details the current status of the development of the thrown object test. As late as the summer of 1980, ES proposed some modifications to incorporate technical changes in response to public comment. A further issue that has received a great deal of attention in the past, and which might require further consideration is the desirability of incorporating velocity in the test data. As discussed in Issue 1 above, ES believes that the model could accurately link test scores to injury rates without inclusion of velocity measurements specifically; however, ES could reevaluate this issue before a rule became mandatory.

Issue: Address the technical feasibility of relying on the existing voluntary standard (ANSI B7.1.1) or the new requirements being developed by OPEI.

Discussion: Engineering Sciences does not feel that the thrown objects parts of the ANSI Safety Specifications for power mowers adequately measure and control the thrown objects hazard. A formal thrown objects test comparison is reported in Ref. (1) which ranked the ANSI test procedure sixth out of seven on effectiveness as a test procedure. Among other deficiencies noted, the ANSI test displayed little or no discriminating power (i.e., ability to rank a mower from best to worst in terms of their thrown object behavior) and it does not simulate actual conditions.

The Outdoor Power Equipment Institute has recently started work on a thrown objects test which is somewhat similar to the RTI test. However, there are key differences in a number of elements of these tests which are considered critical to the results of the tests. While the current work by OPEI may produce valuable information, particular features of the test were discarded for sound technical reasons during the development of the RTI test procedure. Significantly, the OPEI approach appears to need extensive work to support its acceptance with respect to repeatability, reproducibility, simplicity, cost, consumer understanding, and correlation to mowing conditions and injury reduction. The RTI test procedure has largely completed these steps.

Issue: Can the RTI test be used for comparing the thrown objects behavior of mowers on the market and/or to assess the effectiveness of a voluntary standard for thrown objects?

Discussion:

As discussed earlier, ES feels the approach used in the RTI test to link thrown object test scores to injury rates is a valid one. Based

on the efforts by RTI in devleoping the test, as well as the conclusions drawn about the test in follow up work, the RTI test should demonstrate very good discriminating power. This being the case, the mechanics of the test should be well suited to a comparison of the potential of a particular mower to cause thrown object injuries compared to another mower, all other factors being equal. For purposes of evaluating or ranking the thrown objects hazard presented by a mower, it should suffice to say that, under identical conditions which accurately simulate real life, a mower consistently throws objects in a manner known to be more hazardous than those thrown by another mower. Because ES believes in the validity of the scoring system and in the ability of the test to simulate the actual thrown object behavior of mowers, we feel that the RTI test could be useful for such a purpose, if desired.

By the same token, the test could be used to rank or evaluate mowers from season to season. Effects in the scoring which are caused by design changes in response to the voluntary standard could be linked to concurrent changes in injury data.

REFERENCES

Forwarded with this Report are copies of the below-referenced reports. These three documents discuss the development of the RTI Thrown Objects test in detail. As described, a number of test approaches have been discussed and evaluated since the beginning of the Power Mower Project. Deficiencies were identified in essentially all of these methods, as well as features that were considered attractive or appropriate to the planned standard. The RTI test is a carefully-documented attempt to combine the better features of the previous test methods in an approach that accurately represented real mowing conditions while allowing for ease of testing where possible.

(1) Thrown Objects Test Comparison; Final Report Part I: Analysis and Evaluation, January 1977, RTI.

(2) Power Lawn Mower Thrown Object Validity Study; Final Report: Part I, July 1980, RTI.

(3) Thrown Object Hazard of Walk-Behind Power Lawn Mowers, May 1980, McNamara, Shelton, Madison, CPSC.

Concurrence

Don R. Clay
Deputy AED, ES

Proposed Rules

Federal Register
Vol. 48, No. 30
Friday, February 11, 1983

This section of the FEDERAL REGISTER contains notices to the public of the proposed issuance of rules and regulations. The purpose of these notices is to give interested persons an opportunity to participate in the rule making prior to the adoption of the final rules.

CONSUMER PRODUCT SAFETY COMMISSION

16 CFR Part 1205

Power Lawn Mowers; Proposed Withdrawal of Proposed Rule

AGENCY: Consumer Product Safety Commission.

ACTION: Proposal to withdraw proposed rule.

SUMMARY: The Commission proposes to withdraw the outstanding portions of this proposed standard addressing hazards associated with power lawn mowers, which was published on May 5, 1977. The Commission has previously issued a final standard based on the portion of the proposal that addressed blade contact injuries from walk-behind power lawn mowers. The remaining portions of the proposal address the hazards of objects thrown by the blades of rotary mowers, fuel ignition from liquid fuel powered mowers, electric shock from electrically-powered mowers, and riding mower stability, shields, steering, brakes, and controls.

The proposed withdrawal of the thrown objects requirements is based on information showing that the lawn mower industry is developing, and plans to adopt, a voluntary standard similar to the one proposed by the Commission. Furthermore, the voluntary standards that apply to currently produced mowers appear to have reduced the risk of thrown objects injuries by up to 27 percent compared to mowers produced before the Commission proposed its standard.

The requirements for fuel ignition from liquid fuel powered mowers and electric shock from electrically-powered mowers are proposed to be withdrawn because the Commission cannot now conclude that these risks are unreasonable or that the proposed requirements would adequately reduce the risks that do exist.

The requirements for riding mowers are proposed to be withdrawn because the Commission believes it will be a more efficient use of Commission resources to provide comment and other assistance to the ongoing industry effort to develop a voluntary standard for riding mowers than to continue development of a mandatory standard at this time.

In order to provide time for consideration of public comments on the proposed withdrawal, the Commission extends the date by which it must publish a final standard or withdraw the proposal to August 10, 1983.

DATES: Comments on the proposed withdrawal should be submitted by April 12, 1983.

ADDRESS: Comments should be addressed to the Office of the Secretary, Consumer Product Safety Commission, Washington, D.C. 20207.

Copies of the staff briefing package and related materials concerning these hazards are available at the Reading Room, Office of the Secretary, Consumer Product Safety Commission, 8th floor, 1111 18th Street, N.W., Washington, D.C. 20207.

FOR FURTHER INFORMATION CONTACT: Carl W. Blechschmidt, Program Manager, Office of Program Management, Consumer Product Safety Commission, Washington, D.C. 20207, (301) 492–6554. Inquiries from the media should be directed to Lou Brott, Office of Media Relations, Consumer Product Safety Commission, Washington, D.C. 20207 (202) 634–7780.

SUPPLEMENTARY INFORMATION:

A. Background

On May 5, 1977, the Commission proposed a standard under section 7 of the Consumer Product Safety Act (CPSA), 15 U.S.C. 2506, for power lawn mowers (42 FR 23052). A discussion of the background and provisions of the proposal is given in the preamble to the proposal.

The proposed standard for power lawn mowers also was a comprehensive standard addressing unreasonable risks of injury associated with both walk-behind and riding mowers. (As used in this notice, the term "riding mower" includes garden tractors). The proposal addressed blade contact injures; injuries caused by objects propelled by the mower blade (thrown objects); injuries due to lawn mowers rolling, slipping, or overturning, or to failure of lawn mower brakes or steering mechanisms; injuries from fires caused by ignition of liquids used as fuel for power mowers; and injuries caused by electric shock from electrically-powered lawn mowers or from electrical ignition systems (42 FR 23052).

The Commission received more than 100 comments on the proposed standard, which raised numerous and complex issues. In order to resolve these issues and to issue a safety standard for lawn mowers in a more efficient manner, the Commission decided to first issue requirements for walk-behind mowers and then to issue requirements for riding mowers.

On June 7, 1978, the Commission published a notice in the Federal Register (43 FR 24697) announcing that it would issue separately the requirements addressing injuries due to blade contact with walk-behind mowers and requirements addressing injuries associated with thrown objects, fuel and electrical hazards, and riding mowers. The Commission in issuing that notice determined it would be a more effective and efficient method of addressing the unreasonable risks of injury associated with power lawn mowers to first issue requirements that address the most numerous injuries and then to do the additional work that would be required to issue requriements addressing other risks of injury.

A final standard addressing the hazard of blade contact from walk-behind power lawn mowers was published on February 15, 1979, (44 FR 9990) and went into effect on June 30, 1982.

Since the publication of the final blade contact standard for walk-behind power mowers, the Commission has continued to evaluate the issues associated with the hazards of objects thrown by the blades of rotary mowers, fuel ignition, electric shock from electrically-powered powers, and riding mowers. As a result of this further consideration, the Commission has preliminarily decided to withdraw its proposed rule addressing these hazards.

Section 9(a)(1)(B) of the Consumer Product Safety Act ("the CPSA"), 15 U.S.C. 2058(a)(1)(B), requires that this withdrawal be accomplished by rulemaking. Although this aspect of section 9(a)(1)(B) was amended by Pub. L. 97–35, the requirement for proposing withdrawal of proposed consumer

product safety rules still applies for rules proposed before August 13, 1981.

The reasons for proposing to withdraw the proposed rule are given below.

B. Specific Provisions

1. *Thrown objects.* The proposed standard contained a performance test intended to evaluate the manner in which a particular mower would throw objects which contact the blade during mowing operations.

The test apparatus consists of an octagonal target enclosure surrounding an artificial turf surface which supports the mower to be tested. Sixpenny nails are injected from three positions into the blade of the mower while it is operating, and the number and locations of the hits of the nails that are propelled against the walls of the enclosure are recorded and compared to pass/fail criteria.

The criteria for walk-behind mowers allow fewer hits in the rear quadrant of the target (compared to riding mowers and to the other quadrants) in order to protect the operator. More hits are allowed in the area facing the usual location of the discharge chute for both riding and walk-behind mowers.

The Commission's staff estimates that thrown objects injuries resulted in 11,800 hospital emergency room treatments in 1979. About 600 victims were hospitalized. An estimated two deaths occur each year.

Most injuries are not severe, but there is the potential for an occasional severe injury or death. Most victims are mower operators (about 80%). About half the operator injuries are puncture or foreign body injuries as opposed to lacerations, fractures, or abrasions; 10% of the puncture and foreign body injuries require hospitalization. The most serious injuries are usually head and torso injuries. It is estimated that 800 operators were treated in 1979 in hospital emergency rooms for head and torso thrown objects injuries.

An estimated 2,000 bystanders were injured. About 1,000 bystanders suffered head and torso injuries.

With the present population of about 33 million mowers, and an equal number of mower users, 1 operator in 44 is likely to suffer a thrown object injury of any sort in the operator's lifetime.

The most significant development that has occurred since the Commission proposed its thrown objects requirements has been an effort by the lawn mower industry to develop a voluntary standard that, it appears, will be similar in many respects to the one proposed by the Commission. This test is intended to replace the thrown objects requirements that are presently in the voluntary standard.

The present voluntary standard, ANSI B71.1, includes several requirements that could have an effect on the thrown objects performance of mowers. This standard contains design requirements that a complying mower must have a rear trailing shield and that the mower deck must extend downward ¾†† below the plane of the blade except at the discharge chute. Thrown objects at the discharge chute are addressed with a performance test. For this test, the underside of the mower is sealed so that test projectiles exit out the discharge chute toward a target. The Commission's staff believes that this performance test has the disadvantages of not simulating actual mowing conditions and not sufficiently discriminating between more and less safe mowers.

However, analysis of injury data collected since the existing voluntary requirements were introduced in 1972 shows that mowers certified as meeting the voluntary requirements and produced since 1972 may have caused up to 27 percent fewer injuries than mowers produced before 1972.

After considering the considerable technical work that would be needed before the Commission could issue thrown objects requirements, the fact that the industry is developing a similar standard, and the nature and extent of the risk of injury from thrown objects, the Commission has decided to propose to withdraw its proposed requirements for thrown objects performance of power mowers.

2. *Fuel ignition.* National Electronic Injury Surveillance System (NEISS) data indicate that fewer than 1000 burn injuries due to ignition of fuel are treated in hospital emergency rooms each year. For the 7 year period of 1974–80, the Commission's files contain 14 death certificates associated with ignition of the fuel of power lawn mowers.

The proposal addressed the hazard of fuel ignition by requirements designed to reduce the amount of spilled or leaked fuel and to control the ignition sources of sparks and exhaust heat.

The proposal included a requirement that high tension cables on mowers be fully insulated. A test was also provided to determine that the spark plug connector will not spark against grounded metal if the operator attempts to start the mower while the connector is disconnected. In addition, grounding switches would not be permitted in the high tension (secondary) part of the ignition system.

The proposal also prohibited leakage from the fuel system during any reasonably foreseeable condition of use. In addition, a test was provided to insure that fuel will not contact certain parts of the mower and that not more than 0.95 gm. (.033 fl. oz.) of fuel will collect in any single pool when the fuel tank is overfilled.

From the standpoint of logic and engineering judgment, it would appear that a mower that met the proposed requirements concerning fuel ignition would certainly be safer than one that did not. However, the Commission is unable at this time to determine the extent to which such requirements would decrease the already relatively low incidence of fuel burn injuries associated with these mowers. Without an estimate of the potential benefits of these requirements, the Commission is unable to determine if the costs that would be involved to comply with the requirements would be justified. Therefore, the Commission proposes to withdraw these requirements. If in the future sufficient data become available to show that mowers being produced at that time are unreasonably dangerous because of a lack of the features insured by these requirements, the Commission can propose to issue the requirements based on the new data.

3. *Electrically-powered mowers.* From NEISS data, it is estimated that approximately 800 injuries of any type associated with electrically-powered mowers are treated in hospital emergency rooms. These injuries include those caused by blade contact and thrown objects. The Commission has no data from which it could determine how many of these injuries may be related to shock. The Commission's death certificate files indicate about one death per year associated with electrically-powered mowers. However, some of these may be associated with damaged extension cords rather than with the mower itself.

In order to reduce the hazard of electric shock associated with electrically-powered mowers, the proposal included a performance test to insure that the parts of the electrically-powered lawn mowers which are normally contacted by the operator are covered with insulation having a resistance of at least 250,000 ohms.

Another requirement was included that folding or pivoting handles on electrically-powered mowers shall not entrap electrical cords used with the mower.

A plug blade shielding test was also provided to insure that the plug blades for electrically-powered lawn mowers

are shielded so that they cannot be contacted by a probe while they are still energized by the extension cord.

A switch that disconnects both sides of the power supply to the mower when it is in the OFF position would also be required.

As with the fuel ignition requirements, the Commission lacks sufficient data to determine how many currently available mowers already comply with these requirements or how many shock injuries could be prevented if such requirements were issued. This is especially true since the effectiveness of these requirements could be reduced over time as insulation and shielding becomes damaged or deteriorates. Therefore, due to the small number of injuries and the lack of data showing that these requirements are reasonably necessary, the Commission proposes to withdraw these proposed requirements.

4. *Riding mowers.* Unlike the hazards discussed above, the injuries associated with riding mowers are numerous and often serious. In 1980, riding mowers and garden tractors were involved in an estimated 38,000 medically attended injuries. About 13,800 of these injuries were treated in hospital emergency rooms, with 9 percent of the victims being hospitalized.

Based on information in a statistical sample of 70 cases selected between May 15 and August 15, 1980, it was determined that over two-thirds of the incidents (an estimated 9,800 emergency room injuries) involved riding mowers or garden tractors during a mowing session, including starting and fueling the mowers.

Since 1976, the Commission has received reports of over 30 deaths a year involving riding mowers and garden tractors, in almost equal numbers. The total number of deaths involving both types of products has been estimated at 100 a year by matching death certificates with reports in other Commission data bases.

In the incidents involving riding mower fatalities, three main hazard patterns accounted for 80 percent of the accidents: The mower tipped over, the victim fell under or was run over by the mower, or the victim fell or was thrown from the mower. These hazards also appeared in the data concerning injuries, as did the hazards of blade contact, body contact with another object, entrapment in moving parts of the mower, thrown objects, contact burns, fuel ignition, and starter-related problems.

In order to deal with the identified hazards concerning riding mowers, the roposal included the following provisions:

Riding mower stability and shield requirements. In order to reduce injuries caused by the turning over of a riding mower, static stability requirements were included which specify that the mower's upper wheels shall not lift when it rests on a slope inclined 30° from the horizontal when the mower is facing uphill or downhill or on a slope inclined 20° from the horizontal when the mower is facing in either direction across the slope.

The proposal would also require shields for riding mowers to prevent a foot probe from entering the blade path or contacting any moving mower part driven by the power source that is within 125 cm. (49.2 in.) of a seat reference point of the mower.

Riding mower steering requirements. The proposal would not permit tiller bar steering to be utilized in riding mowers, since a tiller bar requires the operator's body to be in an unstable position during sharp turns. If a mower is steered by dual hand-lever controls, to turn a forward-traveling vehicle to the right, the left control would have to move in a forward direction relative to the right control or the right control would have to move rearward relative to the left control and vice versa. All other types of steering controls shall move to the right, or in a clockwise direction, to turn a forward traveling mower to the right, and vice versa.

A structural integrity test of the steering system was also included. The system would be required to withstand a force of 222 newtons (50-lb.) applied to the steering mechanism while the steerable wheels are held in each of three positions.

Riding mower brakes. The proposed standard includes requirements for attainable stopping distances for riding mowers in both the forward and backward directions. In order that the operator shall be able to control the mower, a test is provided to ensure that the service brake is capable of holding the mower stationary on a slope that is inclined at an angle of 17° when a 222 newton (50 lb.) force is applied to the brake control. The service braking system would function independently of engine operation or the position of the transmission or clutch controls.

A structural integrity test for braking controls was provided which would require foot brakes to be able to withstand a force of 1,670 newtons (375.5 lb.) and hand brakes to be able to withstand a force of 710 newtons (159.7 lb.).

A test for parking brakes was provided to insure that they will limit the amount of roll when the mower is parked on an inclined surface.

In order to further reduce the potential hazard of a runaway mower, the parking brake requirement would also have to be met when the power source is running.

A leg probe was proposed to determine that the brake pedal is located close enough to the seat that smaller operators can apply the necessary force to the pedal.

In order that brakes be reliable to use, brake pedals would be required to have slip resistant contact surfaces and a barrier would be required to prevent the foot from sliding off a right-side control surface toward the right and from sliding off a left-side control surface toward the left.

A riding mower would be required to have a blade control system which will prevent operation of the blade unless a control is actuated by the operator, and the operator would have to be in continuous contact with the control in order for the blade to continue to be driven. The mower would also have a second control which must be actuated before a stopped blade can be restarted. To prevent inadvertent engagement of the blade control, the second control which must be actuated before the stopped blade can be restarted would require a force of at least 110 newtons (24.8 lb.) in order to be actuated.

In order to reduce injuries connected with backover accidents, the blade of a riding mower would have to come to a stop when the transmission or traction drive is positioned for reverse travel.

Riding mowers would be required to have a control so that the blade may be rendered inoperative while the mower is traveling forward. This enables the operator to reduce the hazard from a moving blade when it is not needed for mowing and also to reduce the hazard of thrown objects when the mower is driven across an area covered with gravel or debris.

Again, based on engineering judgment, riding mowers meeting these requirements should be safer than those that do not. However, many of the proposed requirements address accident modes that can be affected by dynamic factors for which no suitable test has been devised. In addition, the riding mowers currently on the market should be evaluated to see the extent to which they currently fail to comply with the proposed requirements, in order to help determine if the requirements are reasonably necessary. For these reasons, much work would need to be done before the Commission would conclude that the cost of incorporating the features needed to comply with the

proposed requirements would be justified by any benefits to be obtained.

The industry trade association, the Outdoor Power Equipment Institute (OPEI), is working toward the development of a standard for riding mowers that could be followed on a voluntary basis by the manufacturers of these mowers. In the past, voluntary standards approved by OPEI have been met by a high percentage of the industry. Therefore, in view of the extensive work that would have to be done by the Commission to complete the development of a mandatory standard, the Commission has concluded that it would be a more efficient use of Commission resources to monitor OPEI's development of the voluntary standard. In this way, the Commission staff's views and comments would be taken into account during the development of the voluntary standard.

Therefore, the Commission has decided to instruct its staff to monitor the development of the voluntary standard and is proposing to withdraw its proposal of a mandatory standard. If the effort to develop an adequate voluntary standard proves unsuccessful, the Commission can consider at that time whether to take additional steps that might lead to the development of a mandatory standard.

C. Effect on Small Businesses and Other Small Entities

In accordance with section 605(b) of the Regulatory Flexibility Act (5 U.S.C. 601 et seq.), the Commission certifies that the proposed rule withdrawing the outstanding portions of the proposed standard for power lawn mowers will not, if issued, have a significant economic impact on a substantial number of small entities (small businesses, small organizations, and small governmental jurisdictions). In contrast to a final regulation having requirements that are being or will be enforced, the proposed standard which is proposed to be withdrawn at this time is not binding, creates no obligations, and has no legal impact. Thus, any action to withdraw the proposed standard will also not have a significant impact on small entities.

D. Environmental Impact

Since the action being proposed is merely to withdraw a previous proposal, it will have little or no potential for affecting the human environment. As a result, the withdrawal does not require either an environmental assessment or an environmental impact statement. See 16 CFR 1021.5(c)(1). (categorical exclusion of safety standards under the National Environmental Policy Act, 42 U.S.C. 4321–4347).

E. Conclusion and Extension of Time

Accordingly, for the given above, and under section 9(a)(1) of the Consumer Product Safety Act, the Commission proposes to withdraw the outstanding portions of the proposed standard for power lawn mowers that was published in the Federal Register on May 5, 1977, and solicits public comment on this proposal.

Section 9(a)(1) of the Consumer Product Safety Act, 15 U.S.C. 2058(a)(1), requires that within 60 days after the publication of a proposed consumer product safety rule, the Commission shall either (1) promulgate a rule respecting the risk of injury associated with such product or (2) withdraw the applicable notice of proceeding, unless the Commission extends the 60-day period for good cause shown and publishes its reasons in the Federal Register.

In order to receive and evaluate comments on this proposal, the Commission, for good cause as an administrative matter, extends the date by which it must either publish a final standard or withdraw the proposal until April 10, 1983.

(Sec. 1212(b), Pub. L. 97–35; 95 Stat. 357)

Dated: February 1, 1983.

Sadye E. Dunn,

Secretary, Consumer Product Safety Commission.

[FR Doc. 83-3836 Filed 2-10-83; 8:45 am]

BILLING CODE 6355-01-M

UNITED STATES GOVERNMENT

Memorandum

U.S. CONSUMER PRODUCT SAFETY COMMISSION

TO : David Parrish, Project Manager
Through: Catherine C. Cook, Acting AEDCA
Through: R. G. Poth, Director, CARM

DATE: MAR 1 0 1981

FROM : Paul Galvydis, CARM

SUBJECT: Thrown Objects Briefing Package

We have reviewed the Thrown Objects Briefing Package and wish to offer a Directorate recommendation to be included in the body of the package.

The Directorate for Compliance and Administrative Litigation recommends the Commission discontinue the development of mandatory requirements to address thrown object hazards and direct the staff to monitor the development of the industry voluntary standard. We believe the staff should proceed to share their expertise with the industry to contribute towards the development of a meaningful voluntary standard, and not waste valuable resources that can be better utilized elsewhere.

This recommendation is based in part on the likely reduction of thrown objects hitting the operator in the control zone due to the shield requirements of the blade contact standard, as well as on enforcement problems anticipated if a mandatory standard is promulgated. While the testing requirements have not been finalized, it appears that test reproducibility, the number of samples that would have to be tested, and the significance of a pass/fail test criteria would present substantial problems in enforcing such a requirement.

UNITED STATES GOVERNMENT

Memorandum

U.S. CONSUMER PRODUCT SAFETY COMMISSION

TO : David Parrish, Project Manager, Powered Equipment, OPM
Thru: James I. Price, Director, ESMT

DATE: 25 FEB 1981

FROM : James M. McNamara, Chief, Mechanical Engineering Branch

SUBJECT: Engineering Recommendation for the Thrown Objects Briefing Paper

References: Draft Thrown Objects Briefing Paper distributed for comment 2/18/81

Comments on the referenced Thrown Objects paper are incorporated into the text of the attached copy of that paper.

We recommend participation in the Voluntary Standard effort to develop improved thrown object requirements and completion of technical work on the CPSC thrown object test and acceptance criteria. It is our belief that such an effort would provide a significant technically supported contribution to the Voluntary Standard effort. It could also provide a basis for Product Safety Assessment evaluaton of the hazard presented by specific mower designs. This work could also provide technical support for both Comparative Safety and Information and Education efforts to better inform consumers about this hazard.

Attachment

UNITED STATES GOVERNMENT

Memorandum

U.S. CONSUMER PRODUCT SAFETY COMMISSION

TO : David Parrish, Project Manager, OPM

DATE: March 9, 1981

THRU: Jaime L. Delgado, AEDFO

FROM : Raymond D. Correia, Senior Program Analyst, FO-O Raymond D. Correia

SUBJECT: Thrown Objects Briefing Package

Attached is the AEDFO sign-off sheet indicating approval of the Thrown Objects Briefing Package.

Based upon the FY-1982 Budget being submitted to Office of Management and Budget and the Congress, I concur with the OPM and OBPPE recommendation that the project be discontinued.

UNITED STATES GOVERNMENT

Memorandum

U.S. CONSUMER PRODUCT SAFETY COMMISSION

TO : Carl Blechschmidt, Acting Program Manager, Power Equipment Team, OPM
Through: Bert Simson, Director, OPM

DATE: MAR 6 1981

FROM : Kenneth R. Rashid, AED for Communications

SUBJECT: Thrown Objects Briefing Package

The Directorate for Communications has reviewed the subject briefing package and submits the following for your information.

During the past three years a Nationwide Power Lawn Mower Information and Education Program was launched (May-September 1978, 1979 and 1980).

Injuries addressed were those due to blade contact with walk behind mowers and injuries associated with thrown objects, fuel and electrical hazards, and riding mowers.

The general target audiences were users, renters or purchasers (actual and potential) of power mower equipment. Special emphasis was placed on reaching younger users who may develop and then maintain safe mowing habits for the rest of their lives. The theme for the program was "Safe Mowing Is Better Mowing."

The following materials were used during the programs conducted during the past 3 years and included information on injuries and safety factors associated with thrown objects.

- Fact Sheet No. 1 Power Lawn Mowers
- Safe Mowing Is Better Mowing (Booklet)
- Power Lawn Mower Safety Kit - Teacher Manual (Booklet)
- Safety, Sales, and Service - Selling Your Customers on Power Lawn Mower Safety (Booklet)
- Tips For Better, Safer Mowing (Single Handout)
- Power Mower Maintenance and Storage Tips (Single Handout)
- Shopping For A Power Mower? Look For Safety Too (Single Handout)
- Make Your Lawn Easier (And Safer) To Mow (Single Handout)
- Safe Mowing Is Better Mowing (Slide-Tape Presentation)
- Hazards and Safety Practices for Power Mowing (Poster)
- Power Mower Hazards and Safety Features (Poster)

Once the Commission has made a decision and new information is available, the Directorate for Communications will review and update our existing publications as part of our quarterly publications review.

At this time, there are no plans for a seasonal information program thrust on lawn mower safety; however, some materials will be available to respond to requests.

UNITED STATES GOVERNMENT

Memorandum

U.S. CONSUMER PRODUCT SAFETY COMMISSION

TO : Carl Blechschmidt, Program Manager
Powered Equipment

DATE: March 10, 1981

FROM : Peter W. Preuss, AED, Health Sciences

SUBJECT: Thrown Objects Decision Package

Health Sciences agrees that the hazard presented by thrown objects from power mowers is quite small in comparison with mower usage. A question is raised, however, by some of the testing data, and is reflected in the last paragraph under option 1, "Discontinue the Project" (p. 4), of the briefing paper. The question is whether or not a small number of mower models pose a much greater risk than the average mower, and therefore account for a disproportionate share of the injuries. There is some suspicion that this is so, but the testing data are not conclusive. The Commission may wish to continue the project to investigate this issue. If it were found that relatively few models posed an unreasonable risk a decision would then have to be made as to how this hazard should be pursued - i.e., through a mandatory standard, or Section 15 action, or some other means, such as an information and education effort, etc.

16 CFR Part 1205

Petition CP 81-8 for Exemption

AGENCY: Consumer Product Safety Commission.

ACTION: Denial of petition for exemption..

SUMMARY: The Commission denies a petition from Mr. Lewis Ely to amend the Safety Standard for Walk-Behind Power Lawn Mowers to exempt from the coverage of the standard mowers equipped with a particular rubber and fabric blade. The Commission denied the petition because the available information shows that the blade presents a risk of significant injuries in the event of contact of hands or feet with the blade. Therefore, the available information did not establish that the requirements of the standard were not reasonably necessary to protect against an unreasonable risk of blade contact injuries.

ADDRESS: Copies of the petition and other materials concerning this issue may be inspected or obtained at the Reading Room, Office of the Secretary, Consumer Product Safety Commission, 8th Floor, 1111 18th Street, N.W., Washington, D.C. 20207, telephone (202) 634-7700.

FOR FURTHER INFORMATION CONTACT: (1). *For general information,* Douglas Noble, Office of Program Management, Consumer Product Safety Commission, Washington, D.C. 20207, telephone (301) 492-6554.

(2) *For media inquiries,* Lou Brott, Office of Media Relations, Consumer Product Safety Commission, Washington, D.C. 20207, telephone (202) 634-7780.

SUPPLEMENTARY INFORMATION: In February of 1979, the Commission issued the Safety Standard for Walk-Behind Power Lawn Mowers, 16 CFR Part 1205 (44 FR 9990; February 15, 1979). The standard contains two main performance requirements designed to reduce blade contact injuries. First, in order to reduce foot injuries to the operator during mowing, the standard requires that a specified probe shaped like a human foot be unable to contact the blade at any point within the rear 120° of the mower. In addition, in order to reduce hand and foot injuries that occur while the operator is not mowing, the standard requires that the blade of the mower must stop rotating within 3 seconds of the time the operator leaves the operating position; in other words, from the time the operator lets go of the handle. This stopping of the blade can be accomplished either by disconnecting the blade from the engine with a device such as a brake-clutch, so that the blade stops while the engine continues to run, or by stopping the blade and the engine at the same time, which is sometimes referred to as the "engine-kill" method of stopping the blade. If the blade and engine are stopped together, the Commission originally concluded that if no power restart mechanism were provided, the user would be motivated to disable the blade stop control to avoid the inconvenience of having to manually restart the mower each time he or she let go of the handle. Therefore, the standard originally required that a mower have a power restart mechanism in the event a manufacturer chose to comply with the standard by stopping the blade and engine at the same time.

The standard also includes a requirement that all mowers have a label that warns of the hazard of blade contact. That requirement went into effect on December 31, 1979. The Commission estimates that the standard will address 7 percent of blade contact injuries with walk-behind rotary mowers.

The effective date of the performance requirements of the standard was originally set by the Commission for December 31, 1981. However, in 1980, the Congress extended the effective date of the standard by six months, to June 30, 1982.

In 1981, the Congress took another step in relation to this standard by directing the Commission to amend the standard to permit the engine-kill/manual restart feature that had previously been excluded. Thus, the present situation is that the standard, including the engine-kill/manual restart option, went into effect on June 30, 1982.

On July 20, 1981, the Commission received a petition (No. CP 81-8) from Mr. Lewis Ely of Atlanta, Georgia, requesting that the Commission amend the standard to allow the use of a particular "safety blade" as a substitute for the requirements of the standard. The blade is a molded rubber compound bonded with an internal fabric layer. The petitioner contends that this blade will reduce the incidence of injuries that occur from contact with the blade and will also reduce the tendency of the lawn mower to impact and propel objects from under the mower. The petitioner stated that this blade will cause only slight scuffing of a tennis shoe, and he recited an incident in which an operator accidentally contacted the blade with his hand, under unspecified conditions, with no apparent injury other than "a severe bruise of the fingers."

In order to find out more about the potential of this blade to produce injuries to a human hand or foot, the staff at the CPSC Engineering Laboratory impacted a series of objects with a conventional steel blade on an operating power mower. The same types of objects were then impacted using the petitioner's blade mounted on the same power mower. The impacted objects included tennis shoes, a ¾" diameter copper tube, a ½" diameter wooden dowel rod, a ½" inside diameter rubber hose, and two filled latex gloves. To make the gloves, a pine block with four wooden dowels was inserted in each glove; one glove was then filled with gelatin, and the other was filled with silicon rubber adhesive sealant.

After reviewing the CPSC Engineering Laboratory reports on the impact of these blades on the objects described above, the Commission's Medical Director concluded that accidental contact with the petitioner's blade could result in severe trauma and would produce wounds comparable to those produced from a rapid, forceful blow from a blunt object. The expected trauma would include crushing injuries, severe bruising, avulsions, and fractures. These types of injuries could often include subsequent loss of sensation or function, disfigurement, and the possibility of later amputation for therapeutic purposes.

With respect to the issue of objects propelled by the mower's blades, the Commission notes that no test known to the commission has been shown to be capable of determining the extent to which particular blades would present a risk of thrown objects injuries. In any event, the standard from which the petitioner seeks an exemption address contact injuries and does not address the question of what additional steps might be desirable in order to minimize thrown objects injuries.

After considering the factors discussed above, the Commission concluded that the available information indicates that the requirements of the Safety Standard for Walk-Behind Power Lawn Mowers, in relation to the blade described by the petitioner, are reasonably necessary to reduce an unreasonable risk of blade contact injuries. Therefore, the Commission denied the petition to amend the standard to exclude mowers using this blade from the coverage of the standard.

Dated: February 1, 1983.

Sadye E. Dunn,

Secretary, Consumer Product Safety Commission.

[FR Doc. 83-3809 Filed 2-10-83; 8:45 am]

BILLING CODE 6355-01-M

16 CFR Part 1205

Petition CP 81-7 for Exemption

AGENCY: Consumer Product Safety Commission.

ACTION: Denial of petition for exemption.

SUMMARY: The Commission denies a petition from Polynovus Industries, Inc., to amend the Safety Standard for Walk-Behind Power Lawn Mowers to exempt from the coverage of the standard mowers equipped with a blade with cutting elements consisting of the pinlike extension of a torsion spring, mounted on a continuous support ring. The Commission denied the petition because the available information shows that the cutting elements and the spokes for the support ring present a risk of significant injuries in the event of contact of hands or feet with the blade. Therefore, the available information did not establish that the requirements of the standard were not reasonably necessary to protect against an unreasonable risk of blade contact injuries.

ADDRESS: Copies of the petition and other materials concerning this issue may be inspected or obtained at the Reading Room, Office of the Secretary, Consumer Product Safety Commission, 8th Floor, 1111 18th Street, N.W., Washington, D.C. 20207, telephone (202) 634-7700.

FOR FURTHER INFORMATION CONTACT:

(1) *For general information,* Douglas Noble, Office of Program Management, Consumer Product Safety Commission, Washington, D.C. 20207, telephone (301) 492-6554.

(2) *For media inquiries,* Lou Brott, Office of Media Relations, Consumer Product Safety Commission, Washington, D.C. 20207, telephone (202) 634-7780.

SUPPLEMENTARY INFORMATION: In February of 1979, the Commission issued the Safety Standard for Walk-Behind Power Lawn Mowers, 16 CFR Part 1205 (44 FR 9990; February 15, 1979). The standard contains two main performance requirements designed to reduce blade contact injuries. First, in order to reduce foot injuries to the operator during mowing, the standard requires that a specified probe shaped somewhat like a human foot be unable to contact the blade at any point within the rear 120° of the mower. In addition, in order to reduce hand and foot injuries that occur while the operator is not mowing, the standard requires that the blade of the mower must stop rotating within 3 seconds of the time the operator leaves the operating position; in other words, from the time the operator lets go of the handle. This stopping of the blade can be accomplished either by disconnecting the blade from the engine with a device such as a brake-clutch, so that the blade stops while the engine continues to run, or by stopping the blade and the engine at the same time, which is sometimes referred to as the "engine-kill" method of stopping the blade. If the blade and engine are stopped together, the Commission concluded that if no power restart mechanism were provided, the user would be motivated to disable the blade stop control to avoid the inconvenience of having to manually restart the mower each time he or she let go of the handle. Therefore, the standard originally required that a mower have a power restart mechanism in the event a manufacturer chose to comply with the standard by stopping the blade and engine at the same time.

The standard also includes a requirement that all mowers have a label that warns of the hazard of blade contact. That requirement went into effect on December 31, 1979. The Commission estimates that the standard will address 77 percent of blade contact injuries with walk-behind rotary mowers.

The effective date of the performance requirements of the standard was originally set by the Commission for December 31, 1981. However, in 1980, the Congress extended the effective date of the standard by six months, to June 30, 1982.

In 1981, the Congress took another step in relation to this standard by directing the Commission to amend the standard to permit the engine-kill/manual restart feature that had previously been excluded. This, the present situation is that the standard, including the engine-kill/manual restart option, went into effect on June 30, 1982.

On June 23, 1981, the Commission docketed a petition (No. CP 81-7) from John Rodish, President of Polynovus Industries, Inc., requesting that the commission amend the standard to allow the use of a particular "safety blade" as a substitute for the blade stopping requirements of the standard. The Polynovus blade consists of a continuous support ring with cutting elements spaced at 45 or 90 degree intervals. Each cutting element consists of two torsion springs mounted in a housing so that one end of the spring wire extends a short distance past the outer edge of the support ring. The petitioner claims that when the cutting element contacts a hand or foot, the cutting element will retract when the impact forces exceed the torsion capabilities of the springs. Petitioner stated that it takes 15 to 30 seconds for this blade to cut through a shoe and that in the event of contact with a human hand, any resulting cut would be much less severe than that resulting from contact with a conventional blade. The petitioner submitted test data on the effects of this blade on shoes, dowel rods, and a hand form with a pigskin covering.

The petitioner further contends that due to the continuous support ring and the rounded leading edges of the spokes for the ring, which also act as airfoils, this blade has a lesser tendency to strike objects in its path and throw them by centrifugal force. The petitioner submitted results of tests with alphabet blocks and croquet balls to support these contentions.

The petitioner argues that because of these qualities and the fact that this blade can be provided at a substantially lower cost than the brake-clutch or power restart mowers that comply with the standard, the requirements of the standard are not reasonably necessary with respect to mowers using the Polynovus blade. The petitioner concludes that such mowers should therefore be exempted from the coverage of the standard.

In order to find out more about the potential of this blade to produce injuries to a human hand or foot, the staff at the CPSC Engineering Laboratory impacted a series of objects with a conventional steel blade on an operating power mower. The same types of objects were then impacted by the petitioner's blade mounted on the same power mower. The impacted objects included tennis shoes, a ¾" diameter copper tube, a ½" diameter wooden dowel rod, a ½" inside diameter rubber hose, and two filled latex gloves. To make the gloves, a pine block with four wooden dowels was inserted in each glove; one glove was then filled with gelatin, and the other was filled with silicon rubber adhesive sealant.

After reviewing the laboratory reports provided by the petitioner and the CPSC Engineering Laboratory on the results of the impact of these blades on the objects described above, the Commission's Medical Director concluded that if the torsion springs of the cutter assembly momentarily contacted the fingers at operating speed, they would produce a number of deep lacerations, quite possibly to the bone. If the cutting elements contacted the palm of the hand, the Medical Director predicts multiple lacerations with considerable hemorrhaging and a high probability of irreparable damage to the function and sensation of the hand. Further, if the hand were inserted into the housing area to clean off grass, the spokes of the support ring would appear to be readily accessible. The Medical Director anticipates the injury potential of the spokes to be quite similar to conventional steel blades. He concluded that the injury potential of the Polynovus blade is within a hazardous range that poses an unacceptable risk of blade contact injuries.

With respect to the issue of objects propelled by the mower's blades, the Commission notes that the tests submitted by the petitioner do not address objects such as wires, nails, and small rocks, which cause the most numerous and serious thrown objects injuries. In addition, the standard from which an exemption is sought addresses only blade contact injuries, and the standard does not address what additional steps could be taken to reduce thrown objects injuries. Also, no test known to the Commission has been shown to be capable of determining the extent to which a particular blade would present a risk of thrown objects injuries.

After considering the factors discussed above, the Commission concluded that the available information indicates that the requirements of the Safety Standard for Walk-Behind Power Lawn Mowers, in relation to the blade described by the petitioner, is reasonably necessary to reduce an unreasonable risk of blade contact injuries. Therefore, the Commission denied the petition to amend the standard to exclude mowers using this blade from the coverage of the standard.

Dated: February 1, 1983.

Sadye E. Dunn,

Secretary, Consumer Product Safety Commission.

[FR Doc. 83-3838 Filed 2-10-83; 8:45 am]

BILLING CODE 6355-01-M

16 CFR Part 1205

Petition CP 81-6 for Exemption

AGENCY: Consumer Product Safety Commission.

ACTION: Denial of petition for exemption.

SUMMARY: The Commission denies a petition from Mr. John Wildy to amend the Safety Standard for Walk-Behind Power Lawn Mowers to exempt from the coverage of the standard mowers embodying certain combinations of the following features. (1) A pan covering the bottom of the mower except for a curved slot adjacent to the forward portion of the cutting circle; (2) specified shapes for the blade, pan, discharge ducts, and discharge chutes intended to eliminate any tendency for the mower's discharge chute to clog; and (3) a single wheel height adjusting means, or a lifting handle, intended to reduce the tendency of operators to attempt to lift the mower by the lower edge of the housing while changing wheel heights. The petition was denied because the petitioner did not specify the particular embodiments of his concept sufficiently to enable the Commission's staff to evaluate the extent to which his design would shield against the possibility of blade contact. In addition, there was insufficient information to evaluate the effacy of some of the mower's features in preventing injuries. Therefore, the available information failed to establish that the requirements of the standard were not reasonably necessary to protect consumers against an unreasonable risk of blade contact injuries.

ADDRESSES: Copies of the petition and other materials concerning this issue may be inspected or obtained at the Reading Room, Office of the Secretary, Consumer Product Safety Commission, 8th Floor, 1111 18th Street, N.W., Washington, D.C. 20207, telephone (202)634–7700.

FOR FURTHER INFORMATION CONTACT:

(1) *For general information,* Douglas Noble, Office of Program Management, Consumer Product Safety Commission, Washington, D.C. 20207, telephone (301)492–6554.

(2) *For media inquiries,* Lou Brott, Office of Media Relations, Consumer Produc Safety Commission, phone (202)634–7780.

SUPPLEMENTARY INFORMATION: In February of 1979, the Commission issued the Safety Standard for Walk-Behind Power Lawn Mowers, 16 CFR Part 1205 (44 FR 9990; February 15, 1979). The standard contains two main performance requirements designed to reduce blade contact injuries. First, in order to reduce foot injuries to the operator during mowing, the standard requires that a specified probe (simulating a human foot) be unable to contact the blade at any point within the rear 120° of the mower. In addition, in order to reduce hand and foot injuries that occur while the operator is not mowing, the standard requires that the blade of the mower must stop rotating within 3 seconds of the time the operator leaves the operating position; in other words, from the time the operator lets go of the handle. This stopping of the blade can be accomplished either by disconnecting the blade from the engine with a device such as a brake-clutch, so that the blade stops while the engine continues to run, or by stopping the blade and the engine at the same time, which is sometimes referred to as the "engine-kill" method of stopping the blade. If the blade and engine are stopped together, the Commission originally concluded that if no power restart mechanism were provided, the user would be motivated to disable the blade stop control to avoid the inconvenience of having to manually restart the mower each time he or she let go of the handle. Therefore, the standard originally required that a mower have a power restart mechanism in the event a manufacturer chose to comply with the standard by stopping the blade and engine at the same time.

The standard also includes a requirement that all mowers have a label that warns of the hazard of blade contact. That requirement went into effect on December 31, 1979. The Commission estimates that the standard will address 77 percent of blade contact injuries with walk-behind rotary mowers.

The effective date of the performance requirements of the standard was originally set by the Commission for December 31, 1981. However, in 1980, the Congress extended the effective date of the standard by six months, to June 30, 1982.

In 1981, the Congress took another step in relation to this standard by directing the Commission to amend the standard to permit the engine-kill/manual restart feature that had previously been excluded. Thus, the present situation is that the standard, including the engine-kill/manual restart option, went into effect on June 30, 1982.

On May 27, 1981, the Commission docketed a petition from Mr. A. J. Wildy of Auckland, New Zealand, on behalf of Inredesco Engineering, Ltd., requesting that the Commission amend the standard to allow the use of a mower design that does not incorporate the blade stopping feature required by the standard. This mower design has a plate across the bottom of the mower that completely prevents access to the blade from the bottom of the mower except for a curved slot extending around the forward portion of the blade tip circle. Although Mr. Wildy did not specify a maximum slot angle or slot width that would be allowable for mowers he wished to have exempted, it is apparent that this design would address many of the foot injuries that are addressed by the standard.

The Inredesco design is intended to address hand and foot injuries that might otherwise occur at the curved slot by providing a false nose for the mower housing that would extend forward of the blade for some unspecified distance so that the slot would be removed from the outer front edge of the housing by a sufficient distance that a hand or foot would not contact the blade. The petitioner contends that the remaining hand injuries that could take place by access to the slot from the side of the mower would be most likely to take place during the operation of conventional wheel height adjusters, which the petitioner states are difficult to operate while the weight of the mower is on the wheel. Thus, the mower design for which the exemption is sought would either (a) utilize a single counterbalanced wheel height adjustment that would not require an unweighting of the mower or (b) incorporate a conspicuous lifting handle so that users would not instinctively attempt to lift the mower by its edge when the wheel height adjuster encounters the resistance of the weight of the mower. No data were provided that would enable the Commission to estimate the effectiveness of these features in reducing injuries.

Other than the curved slot, the only access to the blade that could occur with this mower when the bottom plate is in place would be through the discharge chute. A number of the injuries addressed by the blade stop feature of the standard occur when the operator attempts to clear a discharge chute that has become clogged with grass clippings. The petitioner states that this will not occur with the Inredesco mower because of the provision of a paddle feature on the cutting blade that acts in combination with the bottom plate and internal vanes to produce an air flow sufficient to ensure that clogging will not take place. The petitioner did not provide a statement of the outer limits of the parameters that create this effect, which statement could serve to define mowers falling within an exemption, nor did he provide any test data to establish that these features function as claimed.

Despite several attempts by Commission staff to obtain the information, the Commission's evaluation of this petition was severely hampered by the lack of a statement by the petitioner of precisely what features, or ranges of combinations thereof, would serve to define the mowers for which an exemption was sought and of the exact specifications thereof. Furthermore, no data were submitted to show the effectiveness of the central wheel adjustment or handle, the extended front housing, or the nonclogging tendency of the mower in reducing blade contact injuries.

It appears that the features of petitioner's mower would prevent at least a portion of the injuries that are addressed by the standard. However, the lack of a specification of what embodiment or embodiments of the petitioner's principles he wishes to define as an exempted mower, and the lack of data concerning the effectiveness of some of the safety features of such mowers, prevent the Commission from concluding that there is no unreasonable risk of injury associated with petitioner's mower. Therefore, based on the information currently available, the Commission denied the petition to amend the standard to exclude these mowers from the coverage of the standard.

Dated: February 1, 1983.

Sadye E. Dunn,

Secretary, Consumer Product Safety Commission.

[FR Doc. 83-3837 Filed 2-10-83; 8:45 am]
BILLING CODE 6355-01-M

CONSUMER PRODUCT SAFETY COMMISSION

16 CFR Part 1205

Walk-Behind Power Lawn Mowers; Change to Drawing of Foot Probe

AGENCY: Consumer Product Safety Commission.

ACTION: Clarification of drawing.

SUMMARY: The Commission amends the drawing of the foot probe device in its consumer product safety standard for walk-behind power lawn mower to eliminate an ambiguity in the drawing and to give dimensions that are more useful in fabricating the device than were the original dimensions.

EFFECTIVE DATE: The changes to the drawing are effective March 14, 1983.

FOR FURTHER INFORMATION CONTACT: Paul Galvydis, Directorate for Compliance and Administrative Litigation, Consumer Product Safety Commission, Washington, D.C. 20207, phone (301) 492-6400.

SUPPLEMENTARY INFORMATION: On February 15, 1979, the Commission published a final consumer product safety standard to reduce the estimated 77,000 injuries that occur each year from contact with the moving blades of walk-behind power lawn mowers (44 FR 9990; 16 CFR Part 1205).

A detailed explanation of the background and rationale for the standard is given in the Federal Register notice that issued the standard. Briefly, the standard reduces the risk of injury from blade contact with rotary power lawn mowers by mandating two main performance requirements. First, in order to reduce injuries to the hand of the operator, § 1205.5(a)(1) of the standard requires that the mower have a blade control that will stop the blade within 3 seconds of the time that the operator releases the handle of the mower. This is intended to ensure that when the operator's hands leave the handle, the blade will stop before the operator can put his or her hands in the vicinity of the blade. This requirement will also reduce foot injuries that occur when the operator is working or moving around the mower and is not holding the handle.

In order to further reduce foot injuries, § 1205.4(a) of the standard requires that areas of the mower that can be reached by the operator's foot when he or she is holding the handle (the rear 120° of the mower) shall be constructed so that a specified probe that approximates the human foot cannot be brought into contact with the blade from these areas.

Section 1205.8 of the standard provides for a warning label on rotary and reel-type walk-behind power lawn mowers to warn of the hazard of contacting the blade.

The requirement that the blade stop within 3 seconds of the release of this handle can be accomplished in two ways. First, the blade can be disconnected from the mower's power source and brought to a stop while the power source continues to operate. The other way of accomplishing this requirement is to turn off the power source, thereby bringing the blade and the power source to a stop together.

If the blade is stopped by stopping the engine ("engine-kill"), the standard requires that the mower be provided with a power restart mechanism, that the starting controls be within 24 inches of the top of the mower's handle, or that the mower have a protective foot shield which extends 360° around the mower housing. If the manual restart with a 360° foot protective shield alternative is chosen, the entire periphery of the mower must be constructed so that the foot probe device cannot be brought into contact with the blade (§ 1205.4(b)(1)(ii)(B) of the standard). See 46 FR 54933; November 5, 1981.

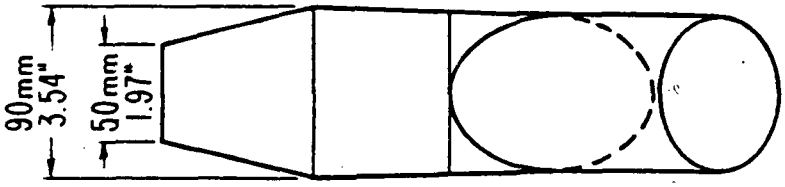
The diagram of the foot probe currently in the standard contains an ambiguity in that the nature of the intersection between the "leg" and the "top of the instep" portions of the probe is not clearly indicated. In the amendment to the drawing which is issued below, a line has been added to the top view to indicate that the top of the instep is a plane whose intersection with the plane on which the "leg" is mounted is a straight line. The Commission believes that this is the way that the drawing has been interpreted by the lawn mower industry and that this change will have no impact on whether any particular mower will pass the foot probe test.

The Commission has also made some changes in the way the dimensions of the foot probe are described in the drawing. In the new drawing, the length of the bottom of the foot is given, whereas this dimension had to be computed in the earlier version. In addition, the previously shown "height of leg" dimension was not useful, and this has been replaced by a dimension for the length of the "shin" portion of the leg. Finally, the new drawing shows the cutoff angle for the cylindrical leg (i.e., the angle between the leg and a horizontal line) rather than the less useful angle between the leg and a vertical line. These changes do not result in any change in the size or shape of the foot probe, but they should be more useful to persons attempting to fabricate a probe as specified in the standard.

Since these changes are simply technical clarifications to an existing rule that will have no adverse impact on the public or the affected industry, the Commission determines, as authorized by 5 U.S.C. 553(b)(B), that general notice of proposed rule making is unnecessary and contrary to the public interest. Accordingly, the changes set forth below will become effective March 14, 1983. The Commission also determines that these amendments are non-material clarifications of the standard that may be made by the procedures in 5 U.S.C. 553, as authorized by 15 U.S.C. 2059(h).

Accordingly, the Commission amends Title 16, Chapter II, Subchapter B, Part 1205 of the Code of Federal Regulations by replacing Figure 2 of Part 1205 with the following figure:

BILLING CODE 6355-01-M



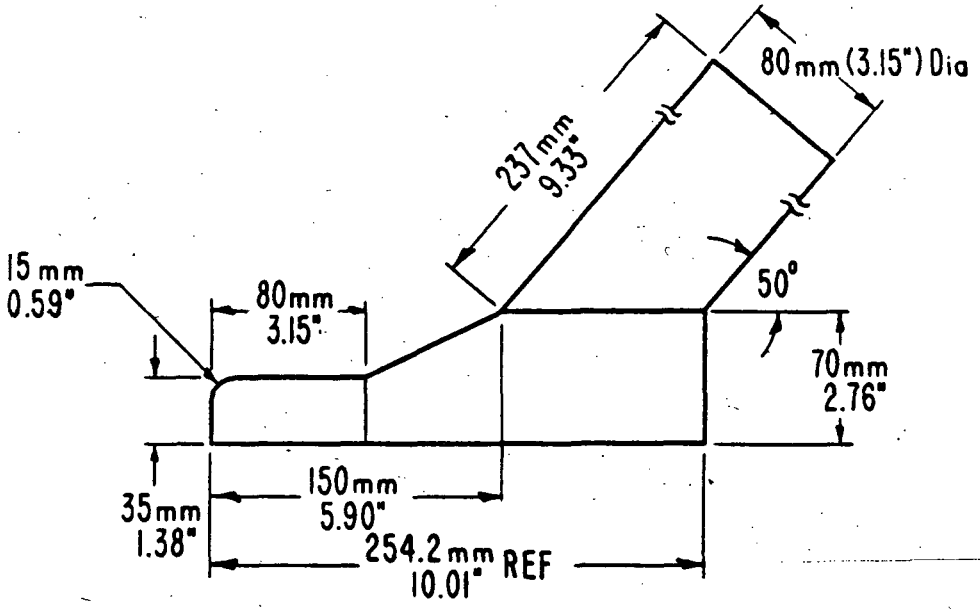


FIG 2—FOOT PROBE

Dated: February 1, 1983.

Sadye Dunn,

Secretary, Consumer Product Safety Commission.

[FR Doc. 83-3832 Filed 2-10-83; 8:45 am]

BILLING CODE 6355-01-C