

Newly proposed power equipment standards will drastically alter existing mower designs if accepted. But what will they do to present cost and repair factors? And will we be able to live with them?

### Background

Last July, the Federal Consumer Products Safety Commission (CPSC), a five-member group empowered to set safety standards on a wide range of consumer products, published a Section 7(B) Notice in the Federal Register that "certain hazards associated with the use of power lawn mowers present unreasonable risks of injury to the public." Publication of a Section 7(B) Notice is the method used by

## The Great Mower Debate

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CPSC to notify an industry that its products are considered dangerous.

The Notice was pretty much of a surprise to the Outdoor Power Equipment Institute (OPEI) whose members produce about 85 percent of all turf and grounds maintenance equipment in use today. The OPEI, which has been developing safety standards since the mid 1950's, carefully followed CPSC's procedures in submitting necessary documents in the hope that it would be selected to establish new safety standards. With 14 years experience in safety programs and a firm foundation of the American National Standards Institute specifications, OPEI assumed this work could be continued and desired results could be achieved in

the prescribed time and at minimum cost.

However, the hand of the federal government intervened and by a split decision, CPSC designated Consumer's Union to develop the proposed standards because they "wanted to involve the consumer and Consumer's Union could better accomplish this."

Consumer's Union, a non-profit organization best known for its publication of the monthly magazine *Consumer Reports*, received a \$90,000 grant from CPSC to develop the standards. A 20-person committee was formed with Bertram Strauss as chairman. There are four or five committee members who have firsthand knowledge of the power equipment industry. Among the other members are three engineers, an economics professor, an attorney, two persons from major retail chains, a surgeon and several consumers "having substantial experience with power lawn mowers."

Consumer's Union was given 90 days to develop the safety standards and present their proposal to CPSC. On Dec. 24, 1974, CPSC granted a six-month extension and an additional \$90,000 for the development of the mandatory standards. The final proposal must be delivered on June 19, 1975, and it is proposed that the standards will be mandatory on all 1976 production.

This is the background of the program which is underway. Now let's touch on some of the proposals which Consumer's Union is considering.

The CPSC has identified six categories of risk of injury associated with power lawn mowers: 1) physical hazards from operator contact with rotating blades; 2) physical hazards from objects propelled by rotating blades; 3) stability, steering and braking hazards; 4) burn and fire hazards; 5) electric shock hazards; and 6) noise hazards.

(continued)

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### Operator Contact

Regarding the hazards associated with operator contact with the blades, Consumer's Union is proposing the following standards:

\* Power lawn mowers shall have a deadman's control to stop the blade within two seconds if the operator leaves operating position without stopping the engine. This is to be

accomplished by a special clutch and brake combination inserted between the power source and the cutting mechanism.

\* There shall be a means to automatically prevent the motor from starting if the deadman's control should become permanently actuated. This requires an electronic sequential sensing mechanism requiring a period of no actuation of the deadman's control before the engine can be started.

\* The deadman's control shall be "fail-safe" with failure of any part of the system resulting in stoppage of the blade. This proposal calls for a spring-loaded blade-clutch brake automatically applied if the control becomes damaged.

How would you like to fix that one in the service shop?

Also proposed is an interlock which will permit blade rotation only when the mower is moving forward, causing blades to stop within two seconds when the mower is shifted to neutral or reverse. Can you visualize this device when you're in a tight area and are trying to do a little trimming?

Consumer's Union is also proposing that a riding mower or lawn tractor have a means on each side to:

\* Prevent an operator's foot from touching the ground within the width of the cut swath, or between fore and aft lines tangent to the blade shielding or the outermost tip of the discharge chute, whichever is greater;

\* and to prevent an operator's foot from being trapped between a wheel and any other part of the mower while the user is in the operating position.

The suggested solution calls for fenders and running boards which extend beyond the outer limits of the blade housing and discharge chute and follow the contour of the wheels to the point beyond the highest point on the wheel. This really presents an interesting picture on a Jacobsen F20 tractor mowing a 21-foot swath, or even an 88-inch rotary. It resembles the flight deck of a nuclear aircraft carrier.

### Propelled Objects

To reduce the energy and range of thrown objects, the proposed maximum tip speed of the blades shall be 15,000 feet per minute. Two years later, maximum tip speed shall be reduced to 12,000. The typical small engine today is horsepower rated at 3600 RPM. Engines will have to be redesigned to produce maximum torque at lower RPM. Suddenly, we find ourselves caught up in complete design revisions with more multi-blade units, larger horsepower engines and complicated drive mechanisms because we no longer develop the torque necessary to obtain performance, particu-



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larly with the large sized single blade machines. This problem can be effectively solved by shielding, so it seems unnecessary to accept this standard.

### Stability Hazards

Regarding stability hazards, Consumer's Union is suggesting the following standards:

- \* a riding mower shall not tip on a 30-degree slope or the steepest slope it is able to climb, whichever is greater;

- \* a riding mower shall emit a continuous audible warning sound when the mower is tilted to an angle five degrees from the limits of stability;

- \* a red flashing warning light will turn on to warn hard-of-hearing operators that the mower is tilted to an angle five degrees from the limits of stability;

- \* a power lawn mower shall have an interlock to stop the engine and halt the blade in the event of tipping beyond the limits of stability. This interlock shall function when any pair of wheels leaves the ground.

If you have ever been involved with servicing interlocks, you will realize that everything outlined above will require electronic circuitry far beyond our ability to trouble shoot in case of failure. It is frankly admitted by the engineering group studying the proposed interlock that individual wheel sensors with the programmable sequencing required to accomplish this interlock system are far beyond their abilities to design, and will require a minicomputer on the unit to accomplish the specified results.

### Other Proposed Standards

Another proposed standard would require a riding mower to have a weight sensitive control in the seat which would cause the engine to stall when shifted to forward or reverse unless the control is actuated by a weight of 65 pounds or more on the seat. The purpose is to protect children "who have been know to go joy riding" and is a substitute for mother's supervision. This standard would require an anvil on the seat to negate the effect of the interlock when the mower is in the service shop for engine work.

To reduce fire hazards, it is proposed that the fuel cap remain locked and incapable of being re-

moved until engine and exhaust temperatures are below 250 degrees F., and the cap be provided with an interlock to stop the engine when the cap is removed. Here's another program for the mini-computer.

Burn hazard proposals specify that any surface used for lifting, holding or carrying shall not attain a temperature higher than 105 degrees F. Any other surfaces (including the muffler) that may be contacted casually in normal use, or that may be contacted accidentally by the user or bystander shall not attain a temperature higher than 131 degrees F. This standard should not be difficult to comply with in Siberia in the winter, but try it in the Phoenix desert area where there were more than 100 days of 100-degree or higher temperatures last summer.

The proposals covering braking hazards are so broad and so many brakes are required that it is doubtful if you could ever get the mower going in the first place.

### Unanswered Questions

The obvious question going through your mind is "How does all of this affect me as a professional in the turf and ground maintenance field?"

In November, 1974, I attended a meeting of the special OPEI Engineering Forum on Lawn Mower Standards as an observer. Represented at the meeting were the OPEI, Consumer's Union, CPSC and engineering representatives of major mowing equipment manufacturers. I was the only distributor or end user of the products under discussion in attendance.

Prior to the meeting, I was under the impression that safety standards were being discussed to be incorporated into the typical homeowner rotary mower, whether riding or walking. As the proceedings unfolded, it became apparent that most of the people in attendance were of the same opinion, with the exception of the Consumer's Union and the CPSC representatives.

In order to clear up the scope of the standards, I proposed two questions to the Consumer's Union: 1) Do you make any distinction for your proposals between homeowner and commercial or professional equipment? 2) Do you make any distinction between rotary and reel type mowing equipment?

No attempt was made to answer either question, and the CPSC representative also declined to answer.

The attorney for the OPEI repeated the question to the CPSC representative who again declined to answer. At this point he attempted to answer the first question by giving the following example. If a piece of equipment is used in the maintenance of schoolgrounds, then it involves the children's safety, and if it involves the children's safety, it probably will be interpreted as within the realm of the CPSC. This approach leads us to parks, golf courses and to the ultimate conclusion that all rotary mowers will be covered. The question pertaining to reel versus rotary equipment was resolved in the same manner by saying that if a stability standard is developed, it will be applied by the CPSC across the board to all equipment.

What I am saying should not be construed in anyway as indicative that the OPEI, the equipment manufacturers, or any of us in the power equipment industry are opposing any measures which will make our products safer to use. We welcome any performance standards that will make our equipment cut grass better, cut grass safely and cut grass at a reasonable cost.

What we do not want is arbitrary standards similar to some of those which have been imposed on the automobile industry to protect drivers from their own foolishness, and which result in increased product cost beyond the benefits derived.

There are three elements of hazards in the grounds maintenance business with which we must contend: the product, the operator and the environment.

It is our job to recognize an unreasonably and inherently hazardous product and discontinue its use.

It is our job to train, train and retrain our operators and mechanics in safety.

It is our job to know the environmental limitations to the use of a piece of equipment and use it only in those areas where it is safe for the operator and safe for bystanders. Performance standards that are reasonable are not objectionable, but the design of the equipment must be left to the manufacturers. □