



UNITED STATES
CONSUMER PRODUCT SAFETY COMMISSION
WASHINGTON, DC 20207

BALLOT VOTE SHEET

DATE: JUL - 6 2006

TO: The Commission
Todd A. Stevenson, Secretary

THRU: Patricia Semple, Executive Director *L. M. Palomares*
Page C. Faulk, General Counsel
Jeffrey R. Williams, Assistant General Counsel for Enforcement and Information

FROM: Barbara E. Parisi, Attorney, Regulatory Affairs Division *BEP*

SUBJECT: Portable Generators; Advance Notice of Proposed Rulemaking

Ballot Vote Due: JUL 13 2006

Attached is a draft *Federal Register* notice containing an advance notice of proposed rulemaking ("ANPR") concerning portable generators. The U.S. Consumer Product Safety Commission (CPSC) staff prepared this ANPR in response to Chairman Stratton's October 12, 2005 memorandum directing the staff to conduct a thorough review of the status of portable generator safety.

Please indicate your vote on the following options.

- I. APPROVE THE ATTACHED *FEDERAL REGISTER* NOTICE AS DRAFTED

Signature Date

- II. APPROVE THE ATTACHED *FEDERAL REGISTER* NOTICE WITH CHANGES (Please specify)

7/6/06
EXEMPTED FROM THE
RULEMAKING ACT OF 1993
WITH PORTIONS REMOVED

Signature

Date

II. DO NOT APPROVE THE ATTACHED *FEDERAL REGISTER*
NOTICE

Signature

Date

Attachments:

- Draft *Federal Register* notice concerning portable generators
- Memorandum from Jacqueline Elder and Janet Buyer concerning Portable Generators: Advance Notice of Proposed Rulemaking



UNITED STATES
 CONSUMER PRODUCT SAFETY COMMISSION
 WASHINGTON, DC 20207

Memorandum

Date: June 29, 2006

TO : The Commission
 Todd Stevenson, Secretary *TS*

THROUGH: Page Faulk, General Counsel *PF*
 Patricia Semple, Executive Director *PS*

FROM : Jacqueline Elder, Assistant Executive Director for Hazard Identification and Reduction *JE*
 Janet Buyer, Directorate for Engineering Sciences, Project Manager *JB*

SUBJECT : Portable Generators: Advance Notice of Proposed Rulemaking

The Office of General Counsel is forwarding to the Commission under separate cover an Advance Notice of Proposed Rulemaking (ANPR) about portable generators. The U.S. Consumer Product Safety Commission (CPSC) staff prepared this ANPR in response to Chairman Stratton's October 12, 2005 memorandum directing the staff to conduct a thorough review of the status of portable generator safety in light of carbon monoxide (CO) deaths and injuries attributable to the consumer use of portable generators.

Specifically, the Chairman directed the staff to address, at a minimum, the following issues: (1) Feasibility of safety cut-offs that would shut down a generator before CO reaches unsafe levels; (2) Sufficiency of warning labels to address the danger of CO poisoning associated with portable generators used within or near residences; (3) Development of portable generator performance requirements that would substantially reduce CO emissions; (4) Feasibility of weatherization of portable generators (including ground fault circuit interrupter (GFCI) protection) for use in wet and/or cold outdoor environments; (5) Creation of an information and education campaign; and (6) Potential benefits of the creation of a private sector consortium made up of generator manufacturers that would cooperatively develop a technical solution that adequately addresses the current CO poisoning hazard.

The ANPR discusses both regulatory and non-regulatory alternatives that could be used to reduce portable generator-related deaths and injuries. The CPSC staff is interested in hearing from the public about the alternatives under consideration, and the ANPR is a formal step in asking for this public participation. Although the ANPR focuses on the CO poisoning hazard, information pertaining to the electrocution/shock, fire, and thermal contact burn hazards is also solicited. The ANPR reviews the background of the Commission's concern with this particular product, provides product information as well as death data, describes the existing standards as each relates to the CO hazard, and sets out regulatory and non-regulatory alternatives that are available to the Commission to address generator-related CO deaths. These alternatives include rulemaking to establish portable generator performance requirements that could require

7/6/06

weatherization features, an engine with reduced CO emissions, and/or an interlocking device that would automatically shut down a generator before it creates a hazardous CO environment; development of an information and education campaign focused on hazards of generator use; and corrective actions under section 15 of the Consumer Product Safety Act. The ANPR concludes with an invitation to interested persons to submit information and comments about these alternatives as well as any other approaches that might be used to reduce generator-related deaths and injuries due to any of the hazards.

The staff believes that responses to the ANPR are needed to attempt to reduce the rising CO death toll associated with consumer use of portable generators. The staff recommends that the Commission issue the ANPR for a sixty day comment period.¹

¹ In accordance with 16 C.F.R. § 1031.11(b), the Commission is advised that Janet Buyer, principal author of this memorandum, attended UL meetings, participated in discussions regarding portable generator safety, and provided data support.

CONSUMER PRODUCT SAFETY COMMISSION**16 CFR Chapter II****Portable Generators; Advance Notice of Proposed Rulemaking;
Request for Comments and Information**

AGENCY: Consumer Product Safety Commission.

ACTION: Advance notice of proposed rulemaking.

SUMMARY: This advance notice of proposed rulemaking ("ANPR") initiates a rulemaking proceeding under the Consumer Product Safety Act. The notice discusses both regulatory and non-regulatory alternatives that could be used to reduce portable generator-related deaths and injuries, particularly those related to carbon monoxide poisoning. The Commission invites public comment on these alternatives and any other approaches that could reduce portable generator-related deaths and injuries due to carbon monoxide poisoning, as well as shock/electrocution, fire, and burns. The Commission also invites interested persons to submit an existing standard, or a statement of intent to modify or develop a voluntary standard, to address the risk of injury described in this ANPR. CPSC staff is preparing a separate draft notice of proposed rulemaking (NPR), relating specifically to enhancing the effectiveness of warning labels for portable generators, which will soon be submitted to the Commission for consideration.

DATES: Written comments and submissions in response to this ANPR must be received by the Office of the Secretary not later than

[insert date 60 days after publication in the FEDERAL REGISTER].

ADDRESSES: Comments may be filed by email to cpssc-os@cpssc.gov.

Comments may also be filed by facsimile to (301) 504-0127 or by mail or delivery, preferably in five copies, to the Office of the Secretary, Consumer Product Safety Commission, Room 502, 4330 East-West Highway, Bethesda, Maryland. Comments should be captioned "Portable Generator ANPR."

FOR FURTHER INFORMATION CONTACT: Janet L. Buyer, Project Manager, Directorate for Engineering Sciences, Consumer Product Safety Commission, 4330 East-West Highway, Bethesda, Maryland 20814; telephone (301) 504-7542; email: jbuyer@cpssc.gov.

SUPPLEMENTARY INFORMATION:

A. Background

One of CPSC's strategic goals is to reduce the number of non-fire carbon monoxide (CO) poisoning deaths associated with consumer products by 20% from the average of the years 1999 and 2000 by the year 2013. The total yearly estimated non-fire related CO deaths for each of the years 1999 through 2002 are 109, 138, 130 and 188, respectively. Since 1999, the percentage of estimated CO poisoning deaths specifically associated with generators has been increasing annually. In 1999, generators were associated with 7 (6%) of the total yearly estimated CO poisoning deaths for that year. In 2000, 2001 and 2002, they were associated with 19 (14%), 22 (17%) and 46 (24%) deaths out of the total estimates for each of those years.

On October 12, 2005, Commission Chairman Hal Stratton sent a

memorandum to the Executive Director directing the staff to undertake a thorough review of the status of portable generator safety in light of CO deaths and injuries attributable to the consumer use of portable generators. The staff was directed to address, at a minimum, the following issues: (1) Feasibility of safety cut-offs that would shut down a generator before CO reaches unsafe levels; (2) Sufficiency of warning labels to address the danger of CO poisoning associated with portable generators used within or near residences; (3) Development of portable generator performance requirements that would substantially reduce CO emissions; (4) Feasibility of weatherization of portable generators (including ground fault circuit interrupter (GFCI) protection) for use in wet and/or cold outdoor environments; (5) Creation of an information and education campaign; and (6) Potential benefits of the creation of a private sector consortium made up of generator manufacturers that would cooperatively develop a technical solution that adequately addresses the current CO poisoning hazard.

B. The Product

Portable generators offer a portable means of providing electrical power to a location that either temporarily lacks it or is not provided with electrical service at all. A portable generator has an internal combustion engine to produce rotational energy, which is used to generate electricity. The engine may be

fueled by gasoline, diesel, natural gas, or liquid propane. Most importantly, it is the engine that is the source of carbon monoxide.

Estimates of sales of portable generators for consumer use vary, but could be more than a million units annually. The most popular of these generators are gasoline-powered and are priced in the \$500 to \$800 range. The output of the majority of light duty generators sold to consumers in 2005 was in the 3.5 kW to 6.5 kW range. This is the size of most of the units involved in the fatal incidents CPSC staff investigated in which the rating of the involved generator was identified.

C. Risks Posed by Portable Generators

Generators pose four main hazards: CO poisoning, shock/electrocution, fire, and thermal contact burns. For the 16 year period 1990 through 2005, there have been at least 330 CO poisoning fatalities associated with generators reported to CPSC. Of these 330 fatalities, 228 occurred in the years 1999 through 2005. For the same 16-year period, there have been at least 10 electrocution deaths and 8 fire-related deaths associated with generators reported to CPSC. Since some deaths are reported to CPSC months or years after an incident occurred, counts for recent years may not be as complete as counts for earlier years.

Because the majority of deaths reported to CPSC involving portable generators are associated with the CO poisoning hazard, the staff's review of the voluntary standards and proposed

alternatives have focused primarily on the CO hazard.

D. Voluntary Standards

Staff reviewed existing voluntary standards to determine the extent to which they may address CO poisoning hazards associated with generators. There is currently no U.S. voluntary safety standard specifically applicable to portable generators.

1. UL 2201 "Portable Engine-Generator Assemblies," proposed first edition.

Underwriters Laboratories (UL) is currently developing the first edition of UL 2201 "Portable Engine-Generator Assemblies," through an ANSI-accredited committee process using a Standards Technical Panel (STP). There have been four draft versions of the proposed UL 2201 standard since February 2003. CPSC staff has submitted comments and recommendations on each draft. CPSC staff has commented that the draft proposed standard is inadequate and recommended that the proposed standard include (1) Performance requirements to address consumer exposure to unsafe CO emissions; (2) Performance requirements that would permit safe outdoor use of generators in rain and other poor weather conditions; (3) Improvements to labeling, markings and instructions for portable generators to adequately warn consumers of the CO hazard and inform them of appropriate safety measures; and (4) Requirements for tests to verify safe generator operability when used in cold, damp weather, which may cause icing on the generator engine, thereby degrading its ability to

operate outdoors. The UL draft proposed standard addresses the CO poisoning hazard solely through requirements for cautionary markings and instruction manuals. In December 2004, UL decided that the draft proposed standard would move forward without performance requirements to address CO emissions and weatherization or testing requirements for cold weather operation.

Because consensus had not yet been achieved on the draft UL standard, in April 2006, UL issued an Outline of Investigation for portable generators which serves as the requirements with which a product must conform in order to be eligible to bear the UL mark. UL's Outline of Investigation includes requirements for cautionary markings and advisory information as well as features that will permit safe use in rain (rainproof enclosure, rain tight while-in-use receptacle covers, and ground fault circuit protection on all alternating current output circuits).

Although such Outlines of Investigation are not consensus standards, they represent UL's judgment, together with due consideration of public comments. UL states that it is their intention that the draft proposed standard when finalized will be adopted as an American National Standard upon consensus within the Standards Technical Panel (STP) at a later date.

2. International Standard ISO 8528-8:1995(e)

International Standard ISO 8528-8:1995(E) *Reciprocating internal combustion engine driven alternating current generating*

sets - Part 8: Requirements and tests for low-power generating sets is a standard applicable to portable generators sold overseas. Similar to the draft proposed UL 2201, its requirements regarding the CO poisoning hazard are limited to labels and markings. However, in contrast to the proposed UL 2201, it does have a requirement that the generator shall be able to startup and operate at ambient temperatures between -15 degrees C and 40 degrees C (5 degrees F and 104 degrees F). But this requirement does not specify the ambient relative humidity that is needed to simulate icing conditions that may degrade the engine's ability to run outdoors. Other critical performance issues pertaining to the CO hazard are not addressed.

3. CSA 22.2 No. 100-04 *Motors and Generators*

Canadian Standards Association CSA 22.2 No. 100-04 *Motors and Generators* is a standard that includes requirements for portable and standby generators sold in Canada. This standard does not have any performance requirements that address the CO poisoning hazard. Also, it does not have any requirements to verify engine operability in cold, damp conditions.

E. Regulatory and Non-Regulatory Alternatives to Address the Risks of Injury

As mentioned above, the Chairman's memorandum directed the staff to conduct a comprehensive review of existing portable generator safety measures in light of CO deaths and injuries attributable to consumer use of portable generators. Such review

was to include an exhaustive summary of potential methods for improving portable generator safety. Following is a discussion of some possible regulatory and non-regulatory options available to the Commission.

1. Rulemaking

Under section 7 of the CPSA, the Commission has the authority to adopt a consumer product safety standard consisting of performance requirements for the product and/or requirements that the product be marked with or accompanied by warnings or instructions when such requirements are reasonably necessary to prevent or reduce an unreasonable risk of injury and death associated with the product.¹

Among performance requirements the staff may consider are the weatherization of portable generators, the CO emission rate of portable generators, and/or gas-sensing interlock devices for portable generators.

Weatherization of Portable Generators

Generators that consumers typically use are not safe for use in wet conditions because their electrical components and

¹Under section 27(e) of the CPSA, the Commission has the authority to issue a rule requiring a consumer product manufacturer to provide the Commission with performance and technical data related to performance and safety as may be required to carry out the purposes of the CPSA, and to give notification of such performance and technical data at the time of the original purchase to prospective purchasers and to the first purchaser of the product. Commission staff intend to soon provide the Commission with a draft notice of proposed rulemaking (NPR) pertaining to warning labels for portable generators based on the authority of section 27(e) for its consideration.

connections are not protected. Since generators should never be used indoors because of the risk of CO poisoning, there is an inherent conflict in the actions consumers might take in order to avoid both an electrocution hazard and the CO poisoning hazard when the generator is to be used in wet-weather conditions. Furthermore, consumers may interpret "wet conditions" in varying ways. To be weatherproof, a generator would need, at a minimum, a rain tight or rainproof enclosure, in-use weatherproof receptacle covers, and ground fault circuit protection for all receptacles. Although these features may be feasible, they may not necessarily be practical. For example, the addition of an enclosure may affect the generator's size and portability. Also, these features alone may not universally eliminate the risk of electric shock for all models of portable generators in severe conditions.

Portable Generator Engines with Reduced CO Production

Staff believes that limiting the total amount of CO generated by the engines on portable generators is the most reliable way to limit consumer exposure to harmful CO levels. Technical approaches to limit CO production of large spark-ignition engines have been successful. The addition of catalytic converters to motor vehicles, for example, has had a dramatic impact in reducing CO emissions in automotive engine exhaust. In addition, low carbon monoxide emission marine generators are now commercially available on houseboats.

Interlocking Devices

Another option for reducing the risk of CO poisoning is the concept of a gas-sensing interlock device that will shut off an operating portable generator before it creates a hazardous CO environment. There are systems commercially available and advertised as being designed for the marine and recreational vehicle markets which may potentially be applied to portable generators.

2. Information and Education Campaign

Staff believes that to have a short term effect on the number of CO poisonings associated with portable generators, particularly those already in consumer's hands or in retailers' and manufacturers' inventories, an extensive information and education (I&E) program is needed. Section 5 of the CPSA authorizes the Commission to disseminate information to the public concerning data and information related to the causes and prevention of death and injury associated with consumer products. Staff also believes that a long-term institutionalized national education program is needed to address the increasing rate of CO poisonings associated with generators in particular, and perhaps in general with other consumer products involving combustion. An example of an education component of a comprehensive consumer safety awareness campaign is one conducted by the Gas Appliances Manufacturers Association (GAMA) in 1993-1994 to address water heater ignition of flammable vapors.

3. Recalls and Corrective Actions

Under section 15 of the CPSA, if the Commission determines that a product presents a substantial product hazard the Commission may order the manufacturer, distributor, or retailer of the product to repair the defect in the product, replace the product, or refund the purchase price of the product. 15 U.S.C. 2064(d). Most corrective actions (often called recalls) are undertaken voluntarily by the manufacturer of a product. CPSC's Office of Compliance has been active in investigating potential defects involving portable generators with leaking fuel tanks and fuel lines and has negotiated several recalls. Investigations, and possible recalls, involving the CO poisoning hazard of portable generators also may be pursued.

F. Request for Information and Comments

This ANPR is the first step in developing regulatory and/or non-regulatory actions that will reduce portable generator-related deaths and injuries. The proceeding could result in a mandatory rule for portable generators. All interested persons are invited to submit to the Commission their comments on any aspect of the alternatives discussed above or any other approaches.

In accordance with section 9(a) of the CPSA, the Commission solicits:

1. Written comments with respect to the risk of injury and death identified by the Commission.

2. Written comments regarding the regulatory alternatives being considered, their costs, and other possible alternatives for addressing the risk.

3. Any existing standard or portion of a standard which could be issued as a proposed regulation.

4. A statement of intention to modify or develop a voluntary standard to address the risk of injury discussed in this notice, along with a description of a plan (including a schedule) to do so.

In addition, the Commission is interested in receiving the following information:

1. Any information related to reducing the CO emission rate of engines used on portable generators, weatherization of portable generators, or interlocking device concepts.

2. Information concerning consumer use of generators, specifically, how long they own them, how frequently they use them and for what duration, and product life (in years).

3. Information on portable generator-related shock and electrocutions that have occurred due to use in wet conditions. What conditions constituted "wet conditions"?

4. Information or data on the primary reasons consumers purchase and/or use generators and what appliances, tools, and products they use the generator to supply power to.

5. Any technical data on engine performance while operating in temperatures below 40 degrees Fahrenheit combined with high

humidity (conditions that induce icing).

6. Any information or technical data to support minimum clearance requirements for placement of an operating generator for each of the following purposes: cooling air flow, combustion air flow, avoidance of exhaust impingement on combustible surfaces, and avoidance of CO accumulation in nearby structures.

7. Data on any shelter concepts for generators regarding CO level buildup in and dissipation from the immediate area around the shelter.

8. Any information on the application of an electrical isolation monitor on a generator system to actively measure the insulation resistance between circuit conductors and ground.

9. Any information on death and injury incidents involving CO, electrocution, and thermal hazards (fire and contact burns, etc.) including details of incident scenarios and nature and severity of injuries.

10. All other relevant information and suggestions about ways in which the safety of consumer use of portable generators might be improved.

DRAFT

Dated: _____

Todd A. Stevenson
Secretary, Consumer Product Safety
Commission