



Consumer and Hazardous Products Safety Directorate
Health Canada
269 Laurier Avenue West
Ottawa, Ontario
K1A 0P8

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RE: Notice to interested parties – Danger determination and risk mitigation measures for certain containers of pourable alcohol-based fuels and certain portable firepots that use pourable fuels

In response to incident reports describing fatalities and serious injuries, Health Canada has assessed the hazards associated with flame jetting occurrences that may result from the use of pourable alcohol-based fuels and portable firepots that use pourable fuels.

The purpose of this Notice is to inform you that, on the basis of the assessment described in this Notice, Health Canada has determined that:

- certain containers of pourable alcohol-based fuel that do not have a functional flame mitigation device for the useful life of the product pose a danger to human health or safety, and
- certain portable firepots that use pourable fuels and that do not meet the performance criteria outlined in ASTM F3363-19 or equivalent pose a danger to human health or safety.

The details of Health Canada's analysis, including a description of the products of concern are provided in Appendix A.

Products that pose a danger to human health or safety are prohibited from sale according to paragraph 7(a) or 8(a) of the *Canada Consumer Product Safety Act (CCPSA)*. Consequently, Health Canada is asking that industry stop selling the products of concern.

It is important to note that Health Canada may take immediate compliance and enforcement action in line with the Consumer Product Safety Program's compliance and enforcement policy framework when it has reason to believe that a product is a danger to human health or safety or is non-compliant with the CCPSA or its regulations. Under the CCPSA, compliance and enforcement actions may include seizure, orders to take corrective action, mandatory recall of products, administrative monetary penalties and criminal prosecution.

Appendix B provides information about the criteria that Health Canada considers may be sufficient to mitigate the danger associated with flame jetting occurrences that may result from the use of pourable alcohol-based fuels and portable firepots that use pourable fuels.

Health Canada will continue to monitor the situation and will update this Notice as warranted.

Health Canada reminds regulated parties that:

- it is their responsibility not to manufacture, import, advertise, or sell any consumer products that pose a danger to human health or safety; and
- they must not wait for a communication from Health Canada in order to comply with the CCPSA.

You may wish to subscribe to our electronic newsletter so that you can receive the latest news and information about Health Canada's work in the area of consumer product safety. Instructions on how to subscribe are provided at this link: <https://www.canada.ca/en/health-canada/services/consumer-product-safety/advisories-warnings-recalls/subscribe.html>.

Information resources

If you require additional information regarding this Notice, visit the resources below or contact a Health Canada Consumer Product Safety Office via email (hc.ccpsa-lcspc.sc@canada.ca) or telephone at 1-866-662-0666 (toll-free within Canada and the United States).

- *Canada Consumer Product Safety Act (CCPSA)* and its regulations
<https://laws-lois.justice.gc.ca/eng/acts/C-1.68/index.html>
- Industry Guidance – “Danger to Human Health or Safety” Posed by Consumer Products
<https://www.canada.ca/en/health-canada/services/consumer-product-safety/reports-publications/industry-professionals/industry-guidance-danger-human-health-safety-posed-consumer-products.html>

Appendix A

Legislative Background

The *Canada Consumer Product Safety Act* (CCPSA) addresses dangers to human health or safety posed by consumer products in Canada. Any person who manufactures, imports, advertises, sells or tests a consumer product must comply with all applicable requirements of the CCPSA and its regulations. The Act prohibits the manufacture, importation, advertisement or sale of any consumer product that is a “danger to human health or safety” (sections 7 and 8), and defines the term as follows.

Danger to human health or safety means any unreasonable hazard — existing or potential — that is posed by a consumer product during or as a result of its normal or foreseeable use and that may reasonably be expected to cause the death of an individual exposed to it or have an adverse effect on that individual’s health — including an injury — whether or not the death or adverse effect occurs immediately after the exposure to the hazard, and includes any exposure to a consumer product that may reasonably be expected to have a chronic adverse effect on human health.

Nature of the Products

The danger determination discussed in this Notice focuses on two distinct products given that a flame jetting event can happen when these products are used together. Such use is foreseeable since one (the container of pourable alcohol-based fuel) provides the intended fuel for the other (the portable firepot) and the fuel will need to be replenished when the firepot is used as intended. A general description of each product is provided below.

1. Containers of pourable alcohol-based fuel – the pourable alcohol-based fuel containers of concern are non-refillable. A portable gasoline container, also referred to as a “jerry can”, is not a product of concern for the purposes of this Notice because it is not intended for use with firepots.
2. Firepots – also referred to as fireburners, portable fireplaces, firebowls, patio burners, flamepots, firelights or table top fire pits, are portable, decorative lighting accents that support open flame burning. Firepots may be marketed for indoor and/or outdoor use. They generally consist of a pot or base, usually made of a ceramic or other heat resistant material, an open fuel reservoir (burn cup) that holds alcohol-based fuel, and may also include a snuff tool to extinguish the flame. For clarity, the following types of products are not products of concern for the purposes of this Notice:
 - firepots that use non-pourable fuel, such as wood, propane and natural gas; and
 - products that do not have an open fuel reservoir, such as a refillable oil lamp and outdoor garden torches, which use a wick to sustain the flame.

Incident Reports

As of October 2, 2019, Health Canada has received reports of 12 flame jetting incidents involving firepots and containers of alcohol-based fuel in Canada. These incidents described 2

fatalities and burn injuries to 26 users and bystanders. In many cases the burn injuries described were severe and life-threatening or disabling.

In general, the incidents reported were similar in nature and indicated that attempting to refuel a firepot with pourable alcohol-based fuel resulted in a “fireball” being rapidly projected out of the fuel container.

Analysis

A flame jetting hazard is present, with the combined use of the products, when the user, believing that there is no longer heat or a flame within a firepot (possibly due to the low visibility of the alcohol flame), refuels the device by pouring alcohol-based fuel into the burn cup or similar component. The act of pouring the fuel from a container that is not equipped with a functional flame mitigation device onto a flame within the firepot, or into a firepot that is still hot, may, under certain conditions result in a flame jetting event. This happens when an existing flame, or hot container, ignites the fuel vapours around the pouring fuel stream and the flame front travels up the stream and ignites the air/fuel mixture in the headspace of the fuel container. The ignition of vapours in the container results in a burst of flames and fuel rapidly “jetting out” of the container opening and travelling a distance that is hazardous to the user and/or bystanders.

A flame jetting event presents a fire and burn hazard. A flame jetting event is unexpected and occurs on a millisecond time scale, thus the user and/or bystanders are unable to react quick enough to move away from an incoming flame jet. During an event, fuel may also be expelled from the container and may come into contact with the user and/or bystanders and can result in the burning of clothing and skin over a longer time frame.

Health Canada has identified that the user risk level associated with flame jetting is in the range of high to very high when a container of pourable alcohol-based fuel without a flame mitigation device is used in conjunction with a firepot.

The likelihood of a flame jetting event is greatly reduced if a fuel container is equipped with a functional flame mitigation device. Such a device diminishes the likelihood that the air/fuel mixture in the headspace of the fuel container will ignite when a flame travels up the pouring fuel stream.

The likelihood of a flame jetting event can also be affected by the design and construction of a firepot. For example, while there may be other effective measures, the likelihood of a flame jetting event can be reduced when a firepot:

- does not have an open reservoir to sustain a flame (for example, a refillable oil lamp with an enclosed fuel reservoir and a wick);
- does not allow pourable fuel to accumulate in a fuel burning feature or has a refueling area separate from the flame area;
- is supplied with a snuffer to completely extinguish flames; and
- includes warnings and instructions to guide users in their safe use.

Danger Determination

Based on the danger considerations and details discussed in the following sections, Health Canada believes that certain containers of pourable alcohol-based fuel that do not have a functional flame mitigation device for the useful life of the product pose a danger to human health or safety under the CCPSA, and that certain portable firepots that use pourable fuels and that do not meet the performance criteria outlined in ASTM F3363-19, or equivalent, pose a danger to human health or safety under the CCPSA.

Health Canada recognizes that there may be other possible health or safety concerns with the use of these or similar products; however, at this time the present Notice is focused on the risk of a flame jetting event when a container of pourable alcohol-based fuel is used to refuel a firepot.

Health Canada may vary this Notice in light of new credible information and analysis about the products of concern and risk mitigation measures for them.

Danger Considerations

Considerations for a product to pose a potential danger to human health or safety are outlined in Health Canada's "[Industry Guidance - "Danger to Human Health or Safety" Posed by Consumer Products](#)" (Danger Policy). Five main considerations of the Danger Policy are assessed in this Notice:

- 1) Unreasonable hazard
- 2) Existing or potential hazards
- 3) Normal or foreseeable use
- 4) May reasonably be expected to cause death
- 5) Adverse effect on health

1) Unreasonable hazard

The consideration of unreasonable hazard includes the following components.

a) Inherent hazard

Firepots are products intended to produce open flames, thus they are considered to have an inherent fire and burn hazard associated with their use. However, the flame jetting hazard itself is not required for the functioning of the firepot. Additionally, the flame jetting phenomenon that can happen during the refueling of a portable firepot is not known by the general public. It occurs during reasonably foreseeable use of the products and it is a hidden hazard because alcohol flames may be difficult to see, especially when the fuel is getting low, and alcohol vapours are invisible.

b) Intended and foreseeable users

The intended users of firepots and containers of pourable alcohol-based fuels are adults. A flame jetting event has the potential to severely or fatally injure the intended user and multiple bystanders, who may include children; however, the flame jetting hazard is not known to affect vulnerable populations disproportionately.

c) Social utility

A firepot has little to no social utility. The main purpose of the product is decorative. It does not provide substantial heat, is not used for cooking and is not bright enough to be used as a primary light source.

A container of pourable alcohol-based fuel is used to fuel a product such as a firepot. This product may be a fuel source for other consumer products that may have greater social utility.

d) Availability of alternatives

Some alcohol-based fuels for use in firepots are sold in one-time use (single-use) disposable canisters requiring no pouring of fuel. The flame jetting hazard is not present when these types of disposable canisters are used as intended. There exist similar products to firepots that are fuelled by different fuel sources such as propane, natural gas or firewood. The flame jetting hazard is not present when alternative fuel sources are used that do not involve refuelling by pouring. Other decorative open flame sources such as candles are available to create a similar ambience to firepots without introducing a flame jetting hazard. Flame arrestor technology that can mitigate the risk of flame jetting currently exists.

e) Obviousness of the hazard

The flame jetting phenomenon that can happen during the refueling of a firepot is not known by the general public. Alcohol flames may be difficult to see, especially when the fuel is getting low, and alcohol vapours are invisible, which makes this a hidden hazard. Therefore, how and why flame jetting occurs and how to avoid the hazard is not considered to be obvious to the user or bystanders.

f) Conformity to requirements of consensus-based safety standards

An ASTM International consensus-based safety standard for containers of flammable liquid fuel is being developed: ASTM WK60590 - "New Standard Specification for Flame Mitigation Devices for Disposable Flammable Liquid Fuel Containers".

A consensus-based safety standard for firepots was published in February 2019: ASTM F3363-19 - Standard Specification for Unvented Liquid/Gel Fuel-Burning Portable Devices. This standard sets out requirements for portable firepots captured by its scope, including requirements related to:

- the ability to accumulate fuel in the fuel burning area,
- the materials used in their construction,

- the supply of a means to extinguish the flame,
- the emissions for indoor use devices, and
- the stability of the product.

g) Severity of health effect

A flame jetting event that occurs during firepot refuelling can cause burn injuries ranging from minor to fatal in severity. Based on incident reports received by Health Canada, a flame jetting event can be extremely severe in nature, often causing second and third degree burns to the user and/or bystanders, and can involve burns to a large portion of the victim's total body surface area. In many cases, a survivor of a flame jetting event experiences debilitating pain, requires multiple reconstructive surgeries and is scarred for life. There have been two reported fatalities in Canada. Health Canada has identified that the user risk level associated with flame jetting is in the range of high to very high when a container of pourable alcohol-based fuel without a flame mitigation device is used in conjunction with a portable firepot.

2) Existing or potential hazards

A lit firepot presents an existing inherent fire and burn hazard, as it has an open flame.

Pourable alcohol-based fuels are flammable and therefore also present a fire and burn hazard when ignited. The flammability hazard of alcohol-based fuels that are classified as consumer products is regulated by the *Consumer Chemicals and Containers Regulations, 2001* (CCCR, 2001) under the CCPSA. The regulations set out requirements for hazard symbols, bilingual cautionary labelling and first aid treatment instructions on alcohol-based fuel containers to inform users of the flammability hazard and how to use the product safely. The flame jetting hazard is not addressed by these requirements.

Health Canada has focused its determination on the risk of a flame jetting event when a container of pourable alcohol-based fuel is used to refuel a firepot. An existing hazard is present when such products are used together, as evidenced by the fatalities and serious injuries reported to Health Canada. Other hazards may be relevant for alcohol-based fuel containers, or for portable firepots, such as flammability hazards related to stability or emissions during use, but these were not considered in the determination.

3) Normal or foreseeable use (including foreseeable misuse)

Pouring alcohol-based fuel into a lit firepot is not the intended use of the product; the flame should be fully extinguished and the firepot should be allowed to cool before refuelling. However, since the low visibility of the flame may cause the user to believe that the flame is fully extinguished, it is foreseeable that a user may pour alcohol-based fuel into a lit firepot. The act of pouring alcohol-based fuel from a container not equipped with a functional flame mitigation device may, under certain conditions, result in a flame jetting event. Therefore, the hazard of flame jetting presents itself under foreseeable use conditions.

4) May reasonably be expected to cause (death or an adverse effect on health)

When alcohol-based fuel is poured onto a flame in a firepot a flame jetting event may reasonably be expected to occur. As of October 2, 2019, Health Canada has received reports of 12 flame jetting incidents involving firepots and alcohol-based fuel in Canada. These incidents described 2 fatalities and burn injuries to 26 users and bystanders. In many cases the burn injuries described were severe and life-threatening or disabling. Health Canada has identified that the user risk level associated with flame jetting is in the range of high to very high when a container of pourable alcohol-based fuel without a flame mitigation device is used in conjunction with a portable firepot.

5) Adverse effect on health

Based on incident reports received by Health Canada, a flame jetting event can be extremely severe in nature, often causing second and third degree burns to the user and/or bystanders, and can involve a large portion of the victim's total body surface area. In many cases, a survivor of a flame jetting event experiences debilitating pain, requires multiple reconstructive surgeries, and is scarred for life. It is therefore reasonable to associate the use of a container of pourable alcohol-based fuel without a flame mitigation device in conjunction with a firepot as having potential for causing an adverse effect on human health.

Appendix B

Risk Mitigation Measures Related to a Danger Determination

As part of its assessment, Health Canada may identify existing performance criteria, including consensus-based safety standards, which may be effective in mitigating the danger identified. The statements below outline the performance criteria known to Health Canada, and Health Canada's position on whether or not they may be effective in mitigating the identified danger to human health or safety.

Containers of pourable alcohol-based fuel – Based on the analysis in Appendix A, Health Canada believes that containers of pourable alcohol-based fuel that are not equipped with a functional flame mitigation device for the useful life of the product are a danger to human health or safety.

Based on the information currently available, Health Canada considers that the performance criteria outlined in the draft ASTM WK60590 - "New Standard Specification for Flame Mitigation Devices for Disposable Flammable Liquid Fuel Containers" (as of September 16, 2019) or equivalent may be sufficient to mitigate the danger to human health or safety associated with flame jetting occurrences that may result from the use of certain pourable alcohol-based fuels, and to comply with sections 7 and 8 of the CCPSA.

Firepots – Based on the analysis in Appendix A, Health Canada believes that certain portable firepots that use pourable fuels and that do not meet the requirements of ASTM F3363-19, or equivalent, are a danger to human health or safety.

Based on the information currently available, Health Canada considers that meeting the performance criteria outlined in ASTM F3363-19 or an equivalent safety standard may be sufficient to mitigate the danger to human health or safety associated with flame jetting occurrences that may result from the use of certain portable firepots that use pourable fuels, and to comply with sections 7 and 8 of the CCPSA.

Compliance and Enforcement – In the absence of appropriate mitigation of the danger described in this Notice, Health Canada holds the view that the manufacture, importation, advertisement or sale of these products is a contravention of paragraph 7(a) or 8(a) of the CCPSA. Products captured under the CCPSA that pose a danger to human health or safety are subject to compliance and enforcement actions in line with the Program's compliance and enforcement policy framework. Compliance and enforcement actions under the CCPSA may include seizure, orders to take corrective action, mandatory recall of products, administrative monetary penalties and criminal prosecution.