



THE SAFETY OF PERSONAL HYGIENE AND BEAUTY THERAPY EQUIPMENT USED IN COMMERCIAL SETTINGS





The Safety of Personal Hygiene and Beauty Therapy Equipment Used in Commercial Settings

In a society that emphasizes a healthy and attractive personal appearance, manufacturers and service providers are offering consumers an ever-widening array of products and services designed to maintain and enhance their physical appearance and overall well-being. One aspect of that trend is the growth in the number and type of electrical grooming, personal hygiene and beauty therapy devices available for use in both commercial settings and in homes. From hair dryers and curlers to hair growth stimulators, muscle stimulators, and skin cleansers and buffers, such devices have gained consumer acceptance and widespread use.

Currently available standards address safety concerns related to the use of many personal grooming appliances in salons, barber shops, cosmetic studios and other commercial establishments. However, standards covering certain types of personal hygiene and beauty therapy equipment address their use only in a home environment. When such equipment is used in a commercial setting, its use is likely to exceed a manufacturer's specifications for a product intended for personal use. Therefore, testing to current personal hygiene and beauty therapy equipment standards may not sufficiently evaluate the safety risks associated with such unintended use.

This UL white paper discusses the unique safety issues related to the use of personal hygiene and beauty therapy equipment in commercial settings. The paper then reviews current standards covering this class of equipment and the usage considerations addressed in these standards. The white paper will conclude with suggestions for manufacturers on actions that can mitigate the potential safety risks associated with the inappropriate use of personal hygiene and beauty therapy equipment.





Defining Personal Hygiene and Beauty Therapy Equipment

The terms “personal hygiene equipment” and “beauty therapy devices” are generally applied to wide range of electrical and electronic devices intended for use in the home by consumers.

As the term implies, personal hygiene equipment is typically intended to aid consumers in achieving and maintaining hygienic health. Beauty therapy equipment, on the other hand, is primarily intended to maintain or enhance personal appearance.

Personal hygiene equipment includes devices such as electric or battery-powered toothbrushes and oral irrigation equipment, denture cleaners, and contact lens cleaning and disinfecting devices. Beauty therapy equipment includes skin and body buffing devices, skin resurfacing devices, hair removal equipment, and massage units. Current models of beauty therapy equipment often utilize advanced technologies, including lasers and ultrasonic pulses, to achieve their intended effect.

The broad and sometimes indiscriminate use of the terms personal hygiene equipment and beauty therapy devices can lead to confusion among manufacturers and consumers alike. For example, equipment used for personal grooming purposes such as electric shavers and beard trimmers, hair dryers and curling irons, and hair clippers and tweezers, are not usually considered as personal hygiene equipment. Further, certain types of therapy equipment are technically classified as medical devices that are intended for use by trained professionals in the diagnosis or

treatment of a medical condition. These distinctions can be important when it comes to the application of appropriate industry standards to enable legal market entry.

Confusion can be further fueled by the lack of distinction between products intended for personal use and similar products intended for use in commercial settings. Personal hygiene and beauty therapy equipment is primarily designed for occasional use by an individual consumer in a home environment.

Comparable products used in commercial settings, such as a hair or nail salon or spa, may look the same and operate in a similar fashion as products intended for use in homes. However, they must be designed to withstand the demands of continual use by stylists, manicurists, estheticians, massage therapists and others, as well as the extensive wear and abuse that can be expected in a commercial environment.

Finally, more advanced beauty therapy technologies utilizing lasers, ultrasonic pulses and other mechanisms of action are making their way from highly controlled settings, like medical offices and healthcare clinics, to commercial settings such as beauty spas and salons, and even within the home. In a controlled setting, medical devices that also offer beauty therapy benefits are handled by experienced personnel who have been trained in the proper use of such devices. However, when seemingly similar devices migrate from a medical setting to a beauty salon or home, the level of training received by an operator or consumer on the safe use of a device can vary widely from little to none at all.

Potential Safety Issues Associated with Personal Hygiene and Beauty Therapy Equipment

Many of the potential safety-related issues associated with personal hygiene and beauty therapy equipment are linked to the scientific mechanism of action used by the device to produce the intended effect. The primary mechanisms of action, along with their potential safety risks, include the following:

- **Lasers:** Lasers are now widely found in beauty therapy devices used for hair removal (epilation) or skin resurfacing. However, prolonged or inappropriate exposure to light produced by a laser can result in thermal damage to skin and eyes.
- **Vacuum Suction:** Some beauty therapy devices, such as body conditioners and facial cleaners, work through the application of vacuum suction to the skin. But the application of too much suction power can lead to bruised or broken skin or internal blood vessel damage.
- **Steam:** Facial and body saunas and sauna equipment use steam to open skin surface pores to facilitate skin cleansing. However, prolonged exposure to steam or exposure to steam above a prescribed temperature level can result in scalded or burned skin, as well as eye damage.
- **Low-voltage Electricity:** Electrolysis is the process of using very low-voltage electricity to damage



hair sacs buried in the skin, thereby preventing the growth of unwanted facial or body hair. While generally safe, electrolysis can be painful, and scarring and infection can result when improperly used.

- **Low, Medium and High Frequencies:** Electrotherapy devices pass low frequency electric currents through the skin to tone and tighten muscles. High frequency electric current can be used to exfoliate skin. But the application of electric currents to the skin can lead to sparking, producing skin burns

In addition to potential safety concerns associated with a device's mechanism of action, personal hygiene and beauty therapy equipment is typically powered either by direct current or battery power. As such, these devices pose a risk of electric shock to both the equipment operator and the individual receiving treatment. Devices that malfunction or that have been damaged may pose an increased risk of electric shock, as well as a risk of burns from overheated electrical components.

Finally, because personal hygiene and beauty therapy devices come in direct contact with the body, the risk of infection from contaminated surfaces is always present. This risk is particularly high with devices that penetrate the skin directly (such as electrolysis equipment) or devices that produce inhalants, such as steam or ozone.

How Risk Increases by Using Personal Hygiene and Beauty Therapy Equipment in Commercial Settings

In addition to the potential safety issues inherent in the operation of personal hygiene and beauty therapy equipment, there are a number of risks specific to the operation of equipment in commercial settings that has been designed for personal use by a single consumer. These risks stem from the following design considerations:

- **Electrical Design:** Personal hygiene and beauty therapy equipment is generally intended for occasional personal use by one or two individual consumers. Accordingly, critical electrical elements, such as motor interlocks, and the device's intended duty cycle are designed to support this limited use. However, in a commercial setting, such as a salon or spa, an individual device may be used nearly continuously by multiple operators during the course of a single day. A personal hygiene and beauty therapy device subject to such heavy use is more likely to malfunction or fail completely without warning.
- **Enclosure and Internal Components:** A personal hygiene and beauty therapy device operating on a continuous or near continuous basis will generate heat well in excess of that generated by a device operated

occasionally and for a limited period of time. However, in a device designed for personal use, the flammability ratings of plastics used for an enclosure or for internal components are likely to be less rigorous than those required for a device subject to extended use. Sustained exposure of plastic enclosures and components to higher than anticipated heat levels will potentially result in the melting of the plastic, or even fire, and the potential for burns.

- **Power Supply Mechanisms:** Just as the electrical design, enclosures and internal components are selected for compatibility with a device's intended use, appropriate power supply components and mechanisms, such as electrical cords and chargers, must be matched to the environment in which a device is intended to operate. In a commercial setting, such as a salon or spa for example, these components are likely to be subject to levels of abuse not typically experienced in a home environment. Therefore, power components supplied with personal hygiene and beauty therapy devices intended for normal personal use are unlikely to be robust enough to withstand more severe commercial use.

There are other factors that also increase the safety risks associated with the use of personal hygiene and beauty therapy



equipment in commercial settings. For example, commercial-grade cleaning products and practices are usually more harsh than comparable products and practices used in a household environment, potentially damaging or compromising the integrity of product enclosures. In addition, operator training (or the lack of training) can result in the adoption of operations and maintenance procedures suitable only for commercial-grade equipment.

Standards Applicable to Personal Hygiene and Beauty Therapy Equipment

There are a number of product safety standards that apply to certain types of personal hygiene and beauty therapy equipment. These standards are differentiated by product type as well as by whether a product is intended to be used in a household or commercial setting. As previously noted, the intended use of personal hygiene and beauty therapy equipment is an important consideration in the selection of the appropriate product safety standard. The following sections provide a brief summary of the current standards applicable to personal hygiene and beauty therapy equipment.

Standards for Personal Hygiene and Beauty Therapy Equipment Used in Household Settings

- UL 859, the Standard for Safety of Household Electric Personal Grooming Appliances—This standard covers cosmetic and grooming appliances and related equipment intended for household

use, including hair curling irons, hair dryers, manicure sets, hair curler heaters, hair setters, tweezers, facial steamers, hair styling dryers and hair detanglers.

- UL 1431, the Standard for Safety of Personal Hygiene and Health Care Appliances—This standard addresses appliances that are primarily connected by cord to a power source and are intended for use in households or similar locations, and not necessarily under professional supervision. Products addressed in UL 1431 include toothbrushes, oral irrigation appliances, denture cleaners, hydro-massage units and facial cleaners.

Standard for Equipment Used in Commercial Settings

- UL 1727, the Standard for Safety of Commercial Electric Personal Grooming Appliances—This standard covers cosmetic and grooming appliances intended for commercial use in beauty and nail salons, barber shops, and cosmetic studios. Products covered under the standard include hair dryers, hair curling irons, hair conditioning machines, facial therapy units, manicure sets and cosmetology equipment.

Standards for Equipment Used in Household and Commercial Settings

- UL 1028, the Standard for Safety of Hair Clipping and Shaving Appliances—This standard addresses hair clipping and hair





shaving appliances intended for household or commercial use on persons and animals. It does not cover manicure, pedicure or personal grooming appliances.

- UL 1647, the Standard for Safety of Motor-Operated Massage and Exercise Equipment—This standard covers motor-operated massage machines, including magnetic and motor-driven electric vibrators, hand-held massagers, vibrating and massage chairs, and portable motor-operated massage footbaths.

Applicable International Standards

International product safety standards addressing personal hygiene and beauty therapy equipment are found in the various parts of IEC 60335-1, Household and Similar Electrical Appliances—Safety (2010), as follows:

- Part 2-8: Particular requirements for shavers, hair clippers and similar appliances
- Part 2-15: Particular requirements for appliances for heating liquids
- Part 2-17: Particular requirements for blankets, pads, clothing and similar flexible heating appliances
- Part 2-23: Particular requirements for appliances for skin or hair care
- Part 2-27: Particular requirements for appliances for skin exposure to ultraviolet and infrared radiation
- Part 2-32: Particular requirements for massage appliances

It is important to note that product safety standards are continually evolving to reflect the emergence of new technologies and the application of proven technologies in new use environments. Therefore, the determination of the standard or standards that should be used to assess the safety of a specific product should be made in consultation with a qualified third-party testing organization experienced in the evaluation of such products.

Steps Manufacturers Can Take to Mitigate the Risks Associated with the Use of Personal Hygiene and Beauty Therapy Equipment in Commercial Settings

It may be impossible to completely prevent the misuse of personal hygiene and beauty therapy equipment. However, there are a number of steps that manufacturers can take to reduce the incidence of product misuse, minimize potential safety risks to consumers and operators, and support a credible defense against claims of defective or dangerous products. Here is a brief list of possible measures to consider:

- **Provide product labeling that clearly identifies manufacturer's intended use:** Personal hygiene and beauty therapy equipment intended exclusively for personal use should be clearly labeled “Not intended for commercial use,” on both the product and product packaging, as feasible. This simple step can help prevent unintended misuse by consumers.

- **Provide user documentation that discusses the limits of products intended for personal use:** Those who purchase personal hygiene and beauty therapy equipment may be unaware of the potential safety risks associated with the use of such products in commercial settings. Manufacturers can help to educate buyers about these risks by including detailed information in both printed and electronic user documentation.
- **Assess products for their ability to withstand conditions of all anticipated use environments:** To the extent possible, manufacturers should assess the ability of their products to withstand the rigors of expected usage in all anticipated use environments. This may involve assessing a product against the more stringent requirements applicable to commercial equipment. But this assessment may identify important product vulnerabilities.



Conclusion

When used according to manufacturers' guidelines, properly designed personal hygiene and beauty therapy equipment can safely provide consumers with their claimed hygienic and beauty benefits. However, when equipment intended for personal use is used in commercial settings such as beauty salons and spas, actual use may exceed an equipment's design limits. Prolonged operation under such unanticipated conditions can lead to equipment malfunction, exposing equipment operators and consumers to potential safety hazards.

Manufacturers can reduce the risk associated with the unintended misuse of personal hygiene and beauty therapy equipment by clearly labeling the equipment with information regarding its intended use environment. Further, user documentation that provides information about the possible risk associated with equipment misuse can serve to educate users about how to use such equipment safely. Finally, manufacturers can reduce consumer risk as well as exposure to liability claims by testing their products to the requirements of more stringent commercial standards.

Standards development organizations, including UL, are continuously reviewing current product safety standards for personal hygiene and beauty therapy equipment and investigating modifications to address potential safety risks associated with unintended use as well as the introduction of new technologies. A competent third-party testing organization experienced in the evaluation of personal hygiene and beauty therapy equipment can offer manufacturers guidance on the appropriate standard or standards to use to assess the safety of such equipment.

For further information about the evaluation and testing of personal hygiene and beauty therapy equipment, contact Pamela Gwynn, principal engineer, at Pamela.K.Gwynn@ul.com.

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