Health Canada Santé Canada

Guidelines for Tanning Salon Owners, Operators and Users

Canada

Guidelines for Tanning Salon Owners, Operators and Users

A Guideline published in collaboration with the Federal Provincial Territorial Radiation Protection Committee

Our mission is to help the people of Canada
maintain and improve their health.

Health Canada

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Preface

Exposure to ultraviolet A and B radiation can cause sunburn, premature skin ageing, skin cancers, cataracts and other eye and skin diseases. It has also been shown that UV can weaken the body's immune system.

If a person chooses to acquire or enhance a tan using tanning equipment (sunlamp or tanning bed), it is important that this person be aware of the hazards involved so she can make an informed decision about the amount of exposure she receives.

This booklet is designed to give tanning salon owners, operators and users of tanning equipment a fundamental understanding of ultraviolet radiation and its effects on people. It discusses the risks of tanning, provides information on certain cosmetic and medicinal products that increase ultraviolet effects, and provides a list of general guidelines. The final section contains a series of questions for tanning salon personnel to test their knowledge and understanding of the information in this booklet.

The owner of a tanning salon and its staff have to use only equipment that complies with federal Radiation Emitting Devices Regulations. They should know the regulations and refer to them for any question. Owners and operators may refer to this document or to the public health departments in their area: both are good sources of reference. However, following the guidelines listed in this document does not relieve the operator from the obligation to take any additional measures necessary to minimize health hazards in their establishment.

These guidelines have been prepared from similar documents published by Saskatchewan, Manitoba and British Columbia. They have also been reviewed by and are published in collaboration with the Federal Provincial Territorial Radiation Protection Committee.

Glossary of Terms

Delayed tanning – a type of tanning produced by UVB appearing a few days after exposure and lasting up to a few weeks. This process increases the number of melanocytes in the skin. At the same time, these melanocytes increase their production of melanin which then is oxidized and causes tanning.

Dermis – lowest (innermost) layer of cells in the skin under the epidermis.

Epidermis – outer layers of skin in which melanin is found, and where tanning occurs.

Erythema – the medical term for inflammatory redness of the skin. It is the result of an exposure to ultraviolet radiation, particularly UVB. It is commonly called "sunburn".

Immediate tanning – tanning process (mainly triggered by UVA) that darkens only the melanin pigment already present in the skin.

Melanin – pigment in the skin that becomes darker when oxidised under the effect of ultraviolet radiation.

Melanoma – most serious form of skin cancer, malignant and often fatal.

Photokeratitis and **photoconjunctivitis** – painful injuries to the cornea and conjunctiva caused by overexposure to ultraviolet radiation that can be avoided by wearing protective eyewear.

Stratum corneum – tough outer layer of dead skin cells.

Ultraviolet radiation – electromagnetic radiation in the wavelength range from 100 to 400 nanometers. It is shorter and more energetic than visible light but has essentially the same composition. Depending on its wavelength, it penetrates skin to different levels (more deeply in the case of UVA than UVB) and triggers different biological effects.

UVA – ultraviolet radiation (sometimes called "long wave" radiation – 320 to 400 nanometres) which has the ability to penetrate the dermis. UVA has to be 1000 times more intense than UVB to trigger the same erythema level. It is the most common radiation in commercial tanning equipment and is responsible for the darkening of the melanin already present in the skin. An intense exposure to UVA can result in burns in sensitive people. UVA rays can cause premature skin ageing due to their penetration in the dermis. Most tanning beds emit between 7-20 mW/cm² UVA, which is 8 times more than the sun at noon in the summer. Some facials could emit even more UVA.

UVB – ultraviolet radiation (sometimes called "short wave" radiation – 280 to 320 nanometres) that mostly penetrates the epidermis. UVB rays are responsible for sunburns (being 1000 times more erythemally effective than UVA) as well as for delayed tanning that appears within 2 or 3 days and lasts for a longer period of time. UVB is found at varying levels in all commercial types of tanning equipment. Always remember that the letter "B" in UVB reminds us of "burn". Some pieces of tanning equipment can emit as much as 10 times more UVB radiation than others so they can cause serious burns in a very short period of time.

UVC – ultraviolet radiation (100 – 280 nanometres) that is very dangerous to all forms of life, even with only very short exposures. UVC radiation from the sun is completely absorbed by the ozone layer in the higher atmosphere and never reaches the earth's level. Modern tanning equipment should not emit UVC radiation or at least comply to the UVC/UVB ratio dictated in the Regulations.

RISKS OF TANNING

Sunburn

Sunburn (or erythema) is an inflammatory redness of the skin caused by too much exposure to UV radiation, particularly UVB radiation. The small blood vessels in the skin dilate and increase the blood flow to the skin's surface, making it red and painful. This reaction can be almost immediate in severe cases, or may develop up to 24 hours later in less severe cases of overexposure.

Premature Skin Ageing

Ultraviolet radiation causes premature ageing effects such as skin wrinkling and hardening.

Skin Cancer

Skin cancer is the most common form of cancer in Canada. In 2004, there were more than 76,000 new cases of this increasingly prevalent skin disease, including 4,200 melanomas. Within the 71,800 non-melanoma skin cancers reported, there was a ratio of four Basal Cell Carcinomas (BCC) to one Squamous Cell Carcinoma (SCC). More than ever, skin cancer seems to occur in younger individuals. Squamous and basal cell cancers are the most common, but rarely fatal, forms of skin cancer. In most cases, they are caused by UV exposure. Melanoma is a less common, but potentially deadly, type of skin cancer. The main factors that predispose an individual to the development of melanoma seem to be recreational exposure to the sun and a history of sunburn. The risk of developing skin cancer increases as total exposure to UV radiation increases. People with fair skin who burn easily are also more at risk of developing skin cancer.

Eye Problems

Ultraviolet radiation may cause painful temporary injuries to the cornea and conjunctiva called photokeratitis and photoconjunctivitis. These conditions may develop from 2 to 24 hours after exposure, but usually occur within 6 to 12 hours. UVA radiation may cause eye ageing effects, such as browning of the lens and its loss of elasticity. Overexposure to UVB seems to be partly responsible for the appearance of cataracts in the lens. Retinal damage is mostly caused by blue light in the visible spectrum.

TANNING SAFETY GUIDELINES

Owners and operators of tanning salons must be aware of and adhere to the pertinent requirements for tanning equipment under the federal Radiation Emitting Devices Regulations (Tanning Equipment). In addition, operators should follow the guidelines listed below, which have been developed specifically for tanning salon operators.

1. It is recommended that tanning salon clients be informed of these guidelines and advised to consider discussing the risks of artificial tanning with their family physicians.

2. All tanning equipment sold, resold, leased or imported into Canada, including tanning beds, must comply with the requirements specified for tanning equipment under the federal government's Radiation Emitting Devices Regulations. Owners must check with their equipment supplier to ensure that tanning equipment, and any associated apparatus being purchased and used in their salon, are in compliance with the Radiation Emitting Devices Regulations.

3. Knowledgeable operators or staff members who can inform and assist the public in the safe use of tanning devices should always be on the premises during business hours. Staff should be familiar with these guidelines and have successfully completed the questionnaire at the back of this booklet.

4. It is recommended that tanning salon operators ascertain a client's ability to tan, history of sunburns, and history of skin infections, rashes or other skin conditions. It is important that the client discloses information about certain medications or cosmetics to prevent phototoxic and photoallergic reactions. Client records should be kept. This information is to be used for exposure planning and to help clients understand how these factors interact with ultraviolet radiation.

5. People with sensitive skin who always burn and never tan, should be advised by the tanning equipment operator not to use

tanning units. Anyone who has a skin infection, rash or other skin condition should not use tanning equipment without first consulting a doctor.

6. Children under 16 years of age should not use tanning equipment. Depending on provincial or territorial regulations, a minor may require written parental consent.

7. Know your UV light bulbs:

   First and maximum exposure times suggested for different skin types depend on the strength and type of ultraviolet emissions from the light bulbs used in each individual piece of tanning equipment. There are many different models and brands of ultraviolet light bulbs available on the market, producing various intensities and emitting different amounts of UVA and UVB radiation.

   All pieces of tanning equipment are required to carry specific information about first and maximum exposure times based on the user's skin type. The total amount of minutes of exposure corresponding to a recommended dose of 15 kJoules/m^2 annually must also be included. This information is to be provided by the equipment manufacturer and is based on the bulbs provided with the original equipment at the time of sale. The replacement of bulbs in tanning equipment that have different – and often higher – levels of UVA and UVB than the original bulbs, should never happen. Cases of overexposure and burns from UV radiation have occurred as a result of clients being exposed to tanning equipment which has had its original bulbs replaced with newer, more powerful bulbs that do not comply with federal regulations.

   Operators should ensure that replacement bulbs are identical or equivalent to the original bulbs supplied with this piece of tanning equipment at the time of sale. When replacement bulbs are identical to the original ones, the client can rely on the manufacturer's information provided with tanning equipment.

   The operator should ensure that:

a) The recommended maximum exposure time is not increased to compensate for decreasing UV intensity as bulbs age.

b) First and maximum exposure times comply with the manufacturer's recommendation. Clients should know that UVA tanning equipment exposure times are different than those recommended for higher intensity UVB equipment.

c) Ultraviolet radiation warning labels, compliant with the Radiation Emitting Devices Regulations (Tanning Equipment), are well posted on each piece of tanning equipment. These labels are designed to warn clients about ultraviolet radiation and its harmful effects on health. A summary of these guidelines should be available within facilities or in the client reception area.

d) Each tanning device can be easily turned off by the person who is being exposed, without the need to disconnect the electrical plug or remove the ultraviolet lamp (a requirement of the Radiation Emitting Devices Regulations (Tanning Equipment)).

8. The operator should provide each client/customer with ultraviolet radiation safety eyewear that complies with the Radiation Emitting Devices Regulations (Tanning Equipment) and covers the eyes securely. Instructions should be given on how to wear them.

   Protective eyewear used with sunlamps or tanning beds must meet three criteria. The eyewear must have a spectral transmittance that is:

   a) not more than 0.001 over the wavelength range from 200 to 320 nm;

   b) not more than 0.01 over the wavelength range from 320 to 400 nm; and

   c) sufficient over wavelengths greater than 400 nm to enable the user to read the labels and use the controls mentioned in the requirements.

9. A physical barrier, like a clear UV-transmitting plexiglass cover, should always be in place between the lamps and the person being exposed to UV radiation, covering the top and bottom sections of a two-part, hinged tanning bed. This barrier will prevent injury to the user of the equipment in case of accidental lamp breakage. It will also guard against thermal burns from close contact with the bulbs.

10. Whenever maintenance is being performed on the tanning equipment (e.g., changing UV bulbs, cleaning equipment, etc.), employees should turn off the equipment. If the bulbs have to be on, the employees should use protective eyewear and clothing to minimize their exposure.

11. Adequate ventilation is provided in such a way that the temperature of the tanning booth does not exceed 30 °C.

12. Clients are advised that they may have a delayed, adverse reaction to UV exposure like red, irritated and watering eyes, an itching skin rash or even a sunburn. This delayed reaction can take anywhere from less than an hour to as long as a day and a half to develop. If a serious adverse reaction results, the client should be advised to consult their doctor. They should also be asked to notify the tanning salon operator of their reaction. Upon receipt of notification of an adverse reaction, the owner/operator should investigate the incident and implement whatever modifications are needed.

    All such incidents shall be documented and made available to an officer on request. Where an injury to a person is reported to the owner/operator by a duly qualified medical practitioner as a result of an exposure to the tanning equipment under the owner's control, the owner shall inform the health department immediately or any other health authority.

13. Infection control:

    Ensure that common contact surfaces, including protective eyewear, are disinfected between each use, with an appropriate disinfectant.

Appendix A

THE TANNING PROCESS

Skin is made up of basically two layers, the epidermis (outer layer) and the dermis (inner layer). The innermost section or dermis is formed of tissues containing nerves, blood vessels, lymphatics and fatty tissue. The outer layer or epidermis is made up of a series of layers. Cells are created in the bottom or innermost layer of the epidermis. As cells age, they travel from the innermost layer of the epidermis to the outer surface of the skin where they die. This surface layer (or stratum corneum) forms a tough outer protective covering. As the cells move outward, they lose moisture, flatten and eventually flake off the surface of the skin. This process takes about 28 days.

Tanning

There are two effects that occur in the skin following exposure to UV radiation. When the skin is exposed to ultraviolet radiation, slight pigment darkening is observable immediately, called immediate tanning. This results from darkening of the melanin pigment that is already present in the epidermis as it absorbs UVA radiation. This tan is only temporary, and fades within 3 to 36 hours after exposure.

A second process known as “delayed tanning” occurs in some individuals, but not in every white individual, when the skin is exposed to UVB radiation. There are two processes involved in delayed tanning. First, more melanocytes (skin cells capable of producing melanin pigment) are produced at the base of the epidermis, and each melanocyte produces more melanosomes containing the

melanin pigment. These melanin containing units begin to spread themselves throughout the layers of the skin, as they work their way toward the keratinocytes at the surface of the skin. These melanin-containing cells cause the skin to appear darker in colour. Second, the tough outer surface layer of dying skin cells thickens and absorbs more of the hazardous shortwave UVB radiation. This second process takes at least one day to happen, and produces a noticeable tan within a few days that can last for weeks or even months.

Appendix B

SOURCES AND EFFECTS OF ULTRAVIOLET RADIATION

Wavelength	UVC
	100-280 nm
Photon	more energetic
Sources	■ Sun (absorbed by oxygen molecules, ozone and water vapour in the high atmosphere) ■ Germicidal lamps ■ Arc welding equipment ■ High intensity discharge (HID) lamps ■ Medical and industrial lasers
Depth of Penetration	■ Photons from 100-200 nm absorbed in the air ■ Photons from 200-280 nm absorbed by the ozone layer ■ Absorbed in the epidermis by keratin ■ Does not penetrate into the dermis
Effects	■ Cellular DNA not protected: epithelium, cornea and bacteria

UVB	UVA
280-320 nm	**320-400 nm**
	less energetic
■ Sun (5% reaches the earth, wavelengths >297 nm) ■ Germicidal lamps ■ Arc welding equipment ■ HID lamps ■ Phototherapeutic lamps ■ Medical and industrial lasers ■ Tanning equipment (sunbeds)	■ Sun (most important part of natural UV radiation, at least 95%) ■ "Black light" ■ Germicidal lamps ■ Arc welding equipment ■ HID lamps ■ Phototherapeutic lamps ■ Tanning equipment (sunbeds)
■ Photons between 280-297 nm absorbed by the ozone layer, 5% reaches the earth ■ Penetrates into the dermis	■ Not absorbed by the ozone layer ■ Penetrates skin deeper than UVB and UVC
■ Production of vitamin D_3 and delayed tanning ■ Maximum acute and chronic biological effects ■ Sunburn, immuno-suppression, cellular damage, skin cancer, solar urticaria, premature skin ageing, photokeratoconjunctivitis, cataract, pterygium and solar retinitis	■ Immediate tanning ■ Promotes carcinogenic effects of UVB ■ Thermal burns ■ Sunburn, immuno-suppression, cellular damage, photoallergy, phototoxicity, premature skin ageing, photokerato-conjunctivitis, cataract, pterygium and solar retinitis

Appendix C

PROTECTIVE EYEWEAR TO BE USED WITH TANNING EQUIPMENT

Protective eyewear used with tanning equipment like sunbeds must meet the following three criteria. The eyewear must have a spectral transmittance that is:

1. not more than 0.001 over the wavelength range from 200 to 320 nm;
2. not more than 0.01 over the wavelength range from 320 to 400 nm; and
3. sufficient over wavelengths greater than 400 nm to enable the user to read the labels and use the controls.

Appendix D

PRODUCTS THAT INCREASE SENSITIVITY TO ULTRAVIOLET RADIATION

Many products, including prescribed medications, over-the-counter patent medicines, and a wide range of personal care products can increase the skin's sensitivity to UV radiation, also known as photosensitivity. This is an intense reaction of the skin to ultraviolet radiation which can cause burning (or erythema) in a much shorter period than would normally be expected.

Photosensitivity can be caused by products applied directly to the skin or from medications or other substances that have been ingested.

Because there are literally hundreds of known photosensitizing agents under the following general categories, clients taking any medications or using any products (some listed below), should be advised to consult a physician or pharmacist before using tanning equipment.

List of Photosensitizing Drugs

(This list is only informative)

The following table lists some drugs and other agents that have been reported to cause photosensitivity reactions. Those marked with an asterisk cause more frequent reactions. Phototoxic drugs used for

therapeutic purposes such as the psoralens, trioxsalen (Trisoralen) and methoxsalen (Oxsoralen), used for vitiligo and psoriasis, and coal tar (Zetar, and others), used for psoriasis, are not listed.

Some agents that may cause photosensitivity reactions

* Reactions occur more frequently.
(The Medical Letter, Vol. 37 (issue 946), April 14, 1995)

Anticancer drugs

Dacarbazine (DTIC-Dome)
Fluorouracil (Fluoroplex, and others)
Flutamide (Eulexin)
Methotrexate (Folex, and others)
Vinblastine (Velban, and others)

Antidepressants

Amitriptyline (Elavil, and others)
Amoxapine (Asendin, and others)
Clomipramine (Anafranil)
Desipramine (Norpramin, and others)
Doxepin (Adapin, and others)
Imipramine (Tofranil, and others)
Maprotiline (Ludiomil, and others)
Nortriptyline (Aventyl, and others)
Phenelzine (Nardil)
Protriptyline (Vivactil)
Trazodone (Desyrel, and others)
Trimipramine (Surmontil)

Antihistamines

Cyproheptadine (Periactin, and others)
Diphenhydramine (Benadryl, and others)

Antihypertensives

Captopril (Capoten)

Diltiazem (Cardizem, and others)
Methyldopa (Aldomet, and others)
Minoxidil (Loniten, and others)
Nifedipine (Procerdia, and others)

Antimicrobials

Ciprofloxacin (Cipro)
Clofazimine (Lamprene)
Dapsone (generic)
* Demeclocycline (Declomycin, and others)
* Doxycycline (Vibramycin, and others)
* Enoxacin (Penetrex)
* Flucytosine (Ancobon)
Griseofulvin (Fulvicin-U/F, and others)
* Lomefloxacin (Maxaquin)
Minocycline (Minocin, and others)
* Nalidixic acid (NegGram, and others)
Norfloxacin (Noroxin)
Ofloxacin (Floxin)
Oxytetracycline (Terramycin)
Pyrazinamide (generic)
Sulfonamides
Tetracycline (Achromycin and others)
Trimethoprim (Proloprim, and others)

Antiparasitic drugs

Chloroquine (Aralen, and others)
Quinine (many manufacturers)
Thiabendazole (Mintezol)

Antipsychotic drugs

Chlorpromazine (Thorazine, and others)
Fluphenazine (Permitil, and others)
Haloperidol (Haldol, and others)
Perphenazine (Trilafon, and others)
* Prochlorperazine (Compazine, and others)
Thioridazine (Mellaril, and others)

Thiothizene (Navane and others)
Trifluoperazine (Stelazine, and others)
Triflupromazine (Vesprin)

Diuretics

Acetazolamide (Diamox, and others)
Amiloride (Midamor, and others)
Bendroflumethiazide (Naturetin, and others)
Benzthiazide (Exna)
* Chlorothiazide (Diuril, and others)
* Furosamides (Lasix, and others)
* Hydrochlorothiazide (HydroDIURIL, and others)
Hydroflumethiazide (Diucardin, Saluron)
Methyclothiazide (Aquatensen, and others)
Metolazone (Mykrox, Zaroxolyn)
Polythiazide (Renese)
Triamterene (Dyrenium)
Trichlormethiazide (Metahydrin, and others)

Hypoglycemics

Acetohexamide (Dymelor)
Chlorpropamide (Diabinese, and others)
Glipizide (Glucotrol, and others)
Glyburide (DiaBeta, and others)
Tolazamide (Tolinase, and others)
* Tolbutamide (Orinase, and others)

Nonsteroidal anti-inflammatory drugs

Diflunisal (Dolobid)
IbuProfen (Motrin, and others)
Indomethacin (Indocin, and others)
Ketoprofen (Orudis, and others)
Nabumetone (Relafen)
Naproxen (Naprosyn, and others)
Phenylbutazone (Butazolidin, and others)
* Piroxicam (Feldene, and others)
Sulindac (Clinoril, and others)

Sunscreens

Avobenzone (Photoplex; Shade UVAGuard)
Benzophonones (Bain de Soleil; Solbar, and others)
Cinnamates (Bull Frog; Coppertone, and others)
Homosalate (Coppertone; Tropical Blend, and others)
Menthyl anthranilate (Hawaiian Tropic, Neutrogena, and others)
* PABA esters (Tropical Blend, Presun, and others)
* Para-aminobenzoic acid (PABA – 405 Solar Cream)

Others

Alprazolam (Xanax, and others)
Amantadine (Symmetrel, and others)
* Amiodarone (Cordarone)
Benzocaine (many manufacturers)
Benzoyl peroxide (Oxy 10, and others)
* Bergamot oil, oils of citron, lavender, lime, sandalwood, cedar (used in many perfumes and cosmetics); also topical exposure to citrus rind oils)
Carbamazepine (Tegretol, and others)
Chlordiazepoxide (Librium, and others)
Clofibrate (Atromid-S, and others)
Contraceptives, oral
Desoximetasone (Topicort, and others)
Disopyramide (Norpace, and others)
Etretinate (Tegison)
Fluorescein (Fluorescite, and others)
Gold Salts (Myochrysine, and others)
Hexachlorophene (pHisoHex, and others)
Isotretinoin (Accutane)
* 6-methylcoumarin (used in perfumes, shaving lotions and sunscreens)
* Musk ambrette (used in perfumes)
* Promethazine (Phenergan, and others)
Quinidine sulphate and gluconate (many manufacturers)
Tretinoin (Retin-A)
Trimeprazine (Temaril)

Appendix E

RADIATION EMITTING DEVICES ACT (RED Act) – RADIATION EMITTING DEVICES REGULATIONS (TANNING EQUIPMENT)

A summary of the federal *Radiation Emitting Devices Act* and Radiation Emitting Devices Regulations for tanning equipment is presented here for general information only. It is not the legal text; for complete detailed information, please contact the Consumer and Clinical Radiation Protection Bureau (CCRPB) at Health Canada.

Regulations

(Requirements for the *Radiation Emitting Devices Act*, subsection 13(1).)

13. (1) The Governor in Council may make regulations

(a) prescribing classes of radiation emitting devices for the purposes of this *Act*;

(b) prescribing standards regulating the design, construction and functioning of any prescribed class of radiation emitting devices for the purpose of protecting persons against genetic or personal injury, impairment of health or death from radiation;

(c) exempting any radiation emitting device or class of radiation emitting device from the application of all or any of the provisions of this *Act* or the regulations and prescribing the conditions of that exemption;

(d) respecting the labeling, packaging and advertising of radiation emitting devices, and the use of any material in the construction of any radiation emitting device, for the purpose of protecting persons against genetic or personal injury, impairment of health or death from radiation;

(e) prescribing the information that must be shown on any label or package and the manner in which that information must be shown;

(f) requiring persons who manufacture, sell, lease, import into Canada or otherwise deal with any radiation emitting device to maintain such books and records as the Governor in Council considers necessary for the proper enforcement and administration of this *Act* and the regulations;

(g) prescribing the content of and the method of sending a notification in case defect or non-compliance;

(h) respecting the powers and duties of inspectors and analysts and the seizure, taking away, detention, forfeiture and disposition of radiation emitting devices; and

(i) generally, for carrying out the purposes and provisions of this *Act*.

Sale, Lease and Importation Prohibitions

(Requirements of the *Radiation Emitting Devices Act*, section 4.)

4. Except as authorized by regulations made by the Governor in Council, no person shall sell, lease or import into Canada a radiation emitting device if the device

(a) does not comply with the standards, if any, prescribed by the Governor in Council and applicable thereto; or

(b) creates a risk to any person of genetic or personal injury, impairment of health or death from radiation by reason of the fact that it

(i) does not perform according to the performance characteristics claimed for it,

(ii) does not accomplish its claimed purpose, or

(iii) emits radiation that is not necessary in order for it to accomplish its claimed purpose.

Deception

(Required by the *Radiation Emitting Devices Act,* section 5.)

5. (1) No person shall label, package or advertise a radiation emitting device in a manner that is false, misleading or deceptive or is likely to create an erroneous impression regarding its design, construction, performance, intended use, character, value, composition, merit or safety.

Notification

(Required by the *Radiation Emitting Devices Act,* section 6.)

6. (1) Where a person who is the manufacturer or importer of a radiation emitting device becomes aware, after the device has left the person's premises, of the fact that the device

(a) does not comply with the standards, if any, prescribed by the Governor in Council and applicable thereto, or

(b) creates a risk to any person of genetic or personal injury, impairment of health or death from radiation by reason of the fact that it

(i) does not perform according to the performance characteristics claimed for it,

(ii) does not accomplish its claimed purpose, or

(iii) emits radiation that is not necessary in order for it to accomplish its claimed purpose, the person shall forthwith notify the Minister.

(2) Where the Minister determines,

(a) after being notified or

(b) through the Minister's own investigation, research, inspection or testing,

that a radiation emitting device falls under paragraph 6.(1)(a) or (b), the manufacturer or importer of the device shall, if directed by the Minister, notify such persons as the Minister requires of the defect or non-compliance, by such method, giving such details and within such time period as are specified by the Minister.

Definition of Tanning Equipment

(Provided in Schedule I of the Radiation Emitting Devices Regulations)

1. Item 11 of Schedule I to the Radiation Emitting Devices Regulations is for Tanning equipment as defined in section 1 of Part XI of Schedule II.
2. Part XI of Schedule II defines requirements for tanning equipment.

Tanning Equipment Requirements

(Provided in Part XI of the Radiation Emitting Devices Regulations)

Interpretation

1. The following definitions apply in Part XI.

"double-contact medium screw lampholder" means a lampholder described in *American National Standard for Lampholders for*

Electric Lamps, ANSI C81.62-1991, Standard Sheet 2-158-1, entitled *Double-Contact Medium Screw Lampholder*, published by the American National Standards Institute and approved on July 15, 1991. (douille à contact double pour vis moyenne)

"erythema reference action spectrum" means the erythema action spectrum set out in section 5.2 of CIE Standard CIE S 007/E-1998 entitled *Erythema Reference Action Spectrum and Standard Erythema Dose*, published in 1998 by the Commission internationale de l'éclairage. (spectre d'action érythémale de référence)

"exposure position" means any place, orientation or distance relative to the ultraviolet-radiating surface of tanning equipment at which it is recommended by the manufacturer that the user be exposed. (position pendant l'exposition)

"exposure schedule" means a program of exposure recommended by the manufacturer of tanning equipment that takes into account exposure times, intervals between exposures and the degree of sensitivity for each skin type. (programme d'expositions)

"irradiance" means radiant power incident per unit area, expressed in watts per square metre (W/m^2). (éclairement énergétique)

"maximum exposure time" means the longest period for continuous exposure recommended by the manufacturer of tanning equipment. (durée maximale d'exposition)

"protective eyewear" means a device that is worn by the user of tanning equipment to reduce ultraviolet radiation reaching their eyes either directly or indirectly. (dispositif de protection des yeux)

"single-contact medium screw lampholder" means a lampholder described in *American National Standard for Lampholders for Electric Lamps*, ANSI C81.62-1991, Standard Sheet 2-157-1, entitled *Single-Contact Medium Screw Lampholde*r, published by the American National Standards Institute and approved on July 15, 1991. (douille à contact unique pour vis moyenne)

"spectral irradiance" means the irradiance that results from radiation within an infinitesimally small wavelength range, expressed in watts per square metre per nanometre ($W/m^2/nm$). (éclairement énergétique spectral)

"spectral transmittance" means the ratio of the spectral irradiance that is transmitted through protective eyewear to the spectral irradiance that is incident and normal to the surface of the eyewear. (transmittance spectrale)

"tanning equipment" means a device that

(a) can be equipped with one or more ultraviolet lamps; and

(b) induces skin tanning or other cosmetic effects.

It does not include any such device that is used in the production of therapeutic effects for medical purposes. (appareils de bronzage)

"timer" means a device that is capable of ending the emission of ultraviolet radiation from tanning equipment after a preset period. (minuterie)

"ultraviolet lamp" means a device that produces ultraviolet radiation in the wavelength range from 200 nm to 400 nm and is used in tanning equipment. (lampe à rayonnements ultraviolets)

"wavelength" means a wavelength as measured in air. (longueur d'onde)

Information and Labelling

General

2. The information and labels required by this Part must be provided in both official languages.

Information

3. The following information must accompany each piece of tanning equipment:

(a) instructions for its operation and safe use that include

(i) detailed directions for determining the exposure positions,

(ii) the maximum exposure time,

(iii) the minimum interval between consecutive exposures recommended by the manufacturer,

(iv) the maximum number of persons who may, at the same time, be exposed to ultraviolet radiation from the tanning equipment, as recommended by the manufacturer, and

(v) the ultraviolet radiation warning labels described in section 5;

(b) instructions for obtaining repairs and the recommended replacement components and accessories that comply with the requirements of these regulations; and

(c) a warning to always follow the instructions that accompany the equipment so as to avoid injury.

Labelling

4. Every piece of tanning equipment must have permanently affixed to its external surface the following information, clearly legible and readily accessible to view by the user immediately before use:

(a) the manufacturer's name and address;

(b) the model designation, serial number and month and year of manufacture;

(c) detailed directions for determining the exposure positions and a warning that the use of any other position may result in overexposure;

(d) the recommended exposure time, as calculated in seconds using the formula

$$X/ (\Sigma V_{\lambda} R_{\lambda})$$

and converted into and expressed in minutes, where

X is a dose not greater than 100 Joules/m^2 for the first exposure session for untanned skin, gradually increasing over the following sessions to a maximum of 625 Joules/m^2 per session,

λ is the wavelength in nanometers,

R_{λ} is the irradiance of the tanning equipment, measured at the minimum exposure distance, and

V_{λ} is the weighting factor determined in accordance with the erythema reference action spectrum;

(e) the minimum interval between consecutive exposures;

(f) the maximum number of minutes of exposure per year, as recommended by the manufacturer based on a maximum annual dose of 15kJ/m^2 weighted in accordance with the erythema reference action spectrum and taking into account the recommended exposure schedule;

(g) the model designation for each type of ultraviolet lamp that is to be used in the tanning equipment; and

(h) the ultraviolet radiation warning labels designed in accordance with section 5.

5. The ultraviolet radiation warning must

(a) be reproduced from the electronic file provided by the Minister;

(b) include in the French version of the label illustrated in Figure 1 of paragraph (e), enclosed within a black border,

(i) in the upper portion, on a white background, the signal word « Danger » in red with the hazard symbol to its right,

(ii) in the middle portion, the primary hazard statement « Rayonnements ultraviolets » in yellow on a black background, and

(iii) in the lower portion, the following message in black on a white background:

« La surexposition provoque des brûlures aux yeux et à la peau. Porter le dispositif de protection des yeux. Suivre les instructions. Médicaments et cosmétiques peuvent augmenter les effets des UV. L'exposition aux UV peut avoir des effets nocifs sur la santé et contribuer, à long terme, au vieillissement prématuré et au cancer de la peau. Ces effets sont cumulatifs. Plus l'exposition régulière commence tôt, plus les risques qui y sont associés sont élevés. »;

(c) include in the English version of the label illustrated in figure 2 of paragraph (e), enclosed within a black border,

(i) in the upper portion, on a white background, the signal word "Danger" in red with the hazard symbol to its right,

(ii) in the middle portion, the primary hazard statement "Ultraviolet Radiation" in yellow on a black background, and

(iii) in the lower portion, the following message in black on a white background:

"Overexposure causes skin and eye burns. Use protective eyewear. Follow instructions. Drugs and cosmetics may increase UV effects. UV exposure can be hazardous to your health and in the long term can contribute to premature skin ageing and skin cancer. UV effects are cumulative. Greater risks are associated with early and repeated exposure.";

(d) measure

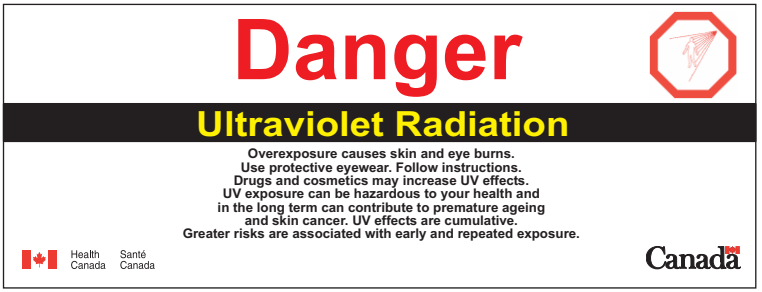
(i) 75 mm high and 200 mm wide, in the case of tanning equipment used for full- or half-body exposure, and

(ii) 50 mm high and 100 mm wide, in any other case; and

(e) conform to the following diagrams:

Figure 1

Figure 2



6. (1) Subject to subsection (2), all advertising material in relation to tanning equipment must include, in a clearly legible manner, the signal word "Danger", the primary hazard statements "Ultraviolet Radiation/Rayonnements ultraviolets" and the messages set out in subparagraphs 5 (b)(iii) and (c)(iii).

(2) Advertising material that is only English or French must include, in a clearly legible manner,

(a) if it is only in French, the signal word "Danger", the primary hazard statement "Rayonnements ultraviolets" and the message set out in subparagraph 5 (b)(iii); and

(b) if it is only in English, the signal word "Danger", the primary hazard statement "Ultraviolet Radiation" and the message set out in subparagraph 5(c)(iii).

7. Every ultraviolet lamp must have a tag, tape or card affixed to it that sets out:

(a) its model designation; and

(b) the warning "DANGER – Ultraviolet radiation. Follow instructions. Use only in fixtures equipped with a timer. / DANGER – Rayonnements ultraviolets. Suivre les instructions. À n'utiliser qu'avec un dispositif pourvu d'une minuterie."

Construction Standards

General

8. All controls, meters, lights or other indicators of a piece of tanning equipment must be readily identifiable and clearly labelled to indicate their function.

Safety Features

9. Every piece of tanning equipment must have the following safety features:

(a) a control by which the person being exposed may easily turn off the tanning equipment at any time without disconnecting the electrical plug or removing the ultraviolet lamps; and

(b) a timer that meets the functioning standards set out in section 16.

10. (1) Every piece of tanning equipment must have a physical barrier between the ultraviolet lamps and the user that prevents any direct physical contact between the user and the lamps.

(2) In the case of tanning beds, the physical barrier must be constructed of plexiglass or an equivalent material.

Components and Accessories

11. Every ultraviolet lamp that is used in tanning equipment must be constructed so that it cannot be inserted and operated in a single-contact medium screw lampholder or a double-contact medium screw lampholder.

12. Every piece of tanning equipment must be accompanied by a number of sets of protective eyewear at least equal to the maximum number of persons who may, at the same time, be exposed to ultraviolet radiation from the tanning equipment, as recommended by the manufacturer of the equipment.

Functioning Standards

13. Every piece of tanning equipment, whether it has its original components or replacement components recommended by the manufacturer, must, under the conditions of use specified by the manufacturer, meet the functioning standards set out in this Part.

14. Every ultraviolet lamp that is used in tanning equipment must function so that, at any distance and in any direction from the radiation source, the irradiance within the wavelength range from 200 nm to less than 260 nm does not exceed 0.003 of the irradiance within the wavelength range from 260 nm to 320 nm.

15. Every replacement ultraviolet lamp must function so that the maximum exposure time remains within 10% of the maximum exposure time originally recommended by the manufacturer.

16. The timer must

(a) be adjustable to preset times and have a maximum timer setting not greater than the maximum exposure time recommended by the manufacturer;

(b) have a margin of error not greater than 10% of the maximum timer setting; and

(c) not automatically reset when the tanning equipment emissions have been ended by the timer.

17. Protective eyewear must have a spectral transmittance that is

(a) not more than 0.001 over the wavelength range from 200 nm to 320 nm;

(b) not more than 0.01 over the wavelength range from 320 nm to 400 nm; and

(c) sufficient over wavelengths greater than 400 nm to enable the user to read the labels and use the control specified in paragraph 9(a).

Appendix F

FEDERAL PROVINCIAL TERRITORIAL RADIATION PROTECTION COMMITTEE (FPTRPC)* POSITION STATEMENT ON ULTRAVIOLET RADIATION

1. There is ample scientific evidence demonstrating that excessive exposure to ultraviolet radiation (UVR), from sunlight or from artificial sources, causes acute and chronic adverse health effects. The main organs affected by UVR are the skin and the eyes. There is increasing evidence indicating that UVR also acts as a systemic immuno-suppressor.
2. Exposure to solar and artificial ultraviolet radiation is widely recognized as an important, and preventable, cause of skin cancer. There is significant scientific evidence indicating that

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* The Federal Provincial Territorial Radiation Protection Committee comprises a forum of delegates from each of the following government organizations: Atomic Energy Control Board; Health Canada (Consumer and Clinical Radiation Protection Bureau) and provincial and territorial radiation protection programs. It was established to support federal, provincial and territorial government radiation protection agencies with their respective mandates in Canada. The mission of the committee is to advance the development and harmonization of practices and standards for radiation protection within federal, provincial and territorial jurisdictions.

long-term exposure to UVR without adequate eye protection also plays a role in the development of some types of cataract and other eye and skin conditions.

3. The main source of ultraviolet radiation in the environment is the sun. Artificial sources of UVR can be found in work and recreation environments. Tanning equipment accounts for significant additional UVR exposure to users.

4. The UVR dose to the population can be significantly decreased by applying simple strategies and measures to reduce sun exposure. The FPTRPC recommends that protective measures against excessive exposure to solar and artificial ultraviolet radiation, such as those contained in its overview document, be implemented by health, education, labour and recreation authorities in all provinces and territories and adopted by the general public.

5. The FPTRPC recommends that particular attention be given to the reduction of UVR exposure among the following groups:

   - **Children**. Their skin is usually more sensitive to UVR than adult skin.

   - **Sensitive people**. People with lightly pigmented skin, hair and eyes are at higher risk of developing skin cancer.

6. The FPTRPC recommends that tanning and the use of tanning equipment, particularly by minors, be discouraged. The FPTRPC further recommends that provincial and territorial authorities evaluate the need for operator-based regulation of tanning salons.

Appendix G

TANNING SALON OPERATOR KNOWLEDGE QUESTIONNAIRE

The owner or manager of the facility should ensure that each operator successfully completes the following questionnaire to evaluate their knowledge about UV radiation.

It is recommended that the owner or manager retain copies of the completed questionnaire in their appropriate employee training file. It is also recommended that operators not be permitted to work with clients until they can answer all of the questions in the questionnaire correctly.

Operator's name: _____

Date completed: _____

1. Name the three wavelength regions that ultraviolet radiation may be divided into.
2. Which of these three wavelength regions of ultraviolet radiation is now most prevalent in commercial tanning equipment emissions?
3. Briefly, what is the skin's reaction that causes erythema?
4. Name one painful eye injury resulting from ultraviolet radiation exposure.
5. Which penetrates most deeply into the layers of the skin UVA or UVB?
6. Which is responsible for long term or long lasting tan UVA, or UVB?
7. What is the correct medical term for skin reddening or sunburn?
8. List two common categories of drugs or medications which may increase sensitivity to ultraviolet exposure.
9. The sun produces about 2.5 mW/cm^2 of UVA in summer around noon. How much UVA does a typical tanning bed produce?
10. What precautions should be taken by an employee when performing maintenance on any of the tanning equipment (e.g., changing UV bulbs, cleaning equipment, etc.)?

True or False

11. Most conventional commercial tanning devices emit some UVB radiation.

    ☐ True ☐ False

12. The risk of developing skin cancer will increase as total ultraviolet exposure is increased.

    ☐ True ☐ False

13. Cataracts are a long term chronic effect of ultraviolet radiation exposure of the eyes.

    ☐ True ☐ False

14. After using a commercial tanning facility, if a customer complains of red irritated and watering eyes, or an itching skin rash causing discomfort, the customer should be told that the cause may be related to ultraviolet exposure.

    ☐ True ☐ False

15. The customer should always wear protective eyewear while using a tanning device.

    ☐ True ☐ False

16. A fair-skinned person with red or blond hair and freckles should be allowed to use a tanning unit.

    ☐ True ☐ False

17. Ultraviolet radiation is responsible for premature skin ageing effects such as wrinkling and skin hardening.

    ☐ True ☐ False

18. UVA radiation exposure causes the skin to produce more melanin-producing cells, thus creating a longer lasting tan.

    ☐ True ☐ False

19. It is the customer's responsibility to ask the owner or operator for instructions on the proper use of tanning equipment.

    ☐ True ☐ False

Results: Correct Answers _____ Incorrect Answers _____

Comments: _____

_____

_____

_____

Owner's or manager's signature: _____

Date: _____

Appendix H

TANNING OPERATOR KNOWLEDGE – ANSWER KEY

1. **UVA**, **UVB** and **UVC** are the three ultraviolet radiation wavelength regions.
2. **UVA** and **UVB**: Commercial tanning equipment all emit primarily UVA radiation, with various amounts of UVB.
3. Erythema is the medical term for inflammatory redness of the skin. It is caused by UV radiation. When this happens, erythema is commonly called “sunburn”.
4. Photokeratitis and photoconjunctivitis (also known as welder’s flash or snow blindness) are two painful eye injuries that can result from exposure to UV radiation.
5. **UVA** is the wavelength which penetrates most deeply into the skin.
6. **UVB** causes long-lasting tan by increasing the production of the melanin pigment in the skin.
7. Erythema occurs when the small blood vessels in the skin dilate and increase the flow of blood to the skin’s surface.
8. Antibiotics, antihistamines, oral contraceptives and tranquillizers are some of the common classes of drugs which can increase the skin sensitivity to UV radiation (see Appendix B for full list).

9. Tanning beds typically produce between 7 to 20 mW/cm² of UVA, which is as much as 3 to 8 times the UVA the sun produces at noon in the summer.

10. When maintenance is being performed on the tanning equipment, the employee should either turn off all the tanning bulbs while working on or around the equipment, or else wear protective eyewear and clothing to minimize their exposure.

True or False Questions

11. **True**

    Most tanning lamps emit some UVB radiation, the form of ultraviolet radiation with the greatest capability of causing sunburns. All operators must be aware of the maximum exposure times for their clients, depending on their skin type and the intensity of the lamps used in their tanning equipment.

12. **True**

    The risk of developing skin cancer increases as total exposure to ultraviolet rays increases.

13. **True**

    In the long term, ultraviolet radiation exposure to the eyes can cause cataracts. In the short term, UV can cause photokeratitis and other painful eye injuries.

14. **True**

    Operators should tell customers that exposure to ultraviolet radiation at a tanning salon can cause watering eyes, an itching skin rash or sunburn.

15. **True**

    All customers must wear protective eye-wear while using tanning equipment.

16. **False**

    Fair-skinned people with red or blond hair and freckles should not use a tanning device. Fair-skinned people are most at risk of burning and skin cancer. Children, the elderly and those who always burn or don't tan well should not use tanning units at all.

17. **True**

    Ultraviolet radiation causes premature skin ageing effects such as wrinkling and hardening of the skin.

18. **False**

    Although radiation penetrates more deeply into the skin, it is mainly UVB exposure that causes the skin to produce more melanin. UVB radiation is 1,000 times more likely to cause sunburn than the same intensity of UVA radiation.

19. **False**

    Operators must provide customers with clear instructions on how to use tanning equipment, including maximum exposure times (based on their skin type) and the need to wear protective eyewear while tanning.