

English is not an official language of the Swiss Confederation. This translation is provided for information purposes only and has no legal force.

**Ordinance
on the Protection of Audiences from Exposure to Hazardous
Sound Levels and Laser Beams
(Sound Levels and Laser Ordinance, SLO)**

of 28 February 2007 (Status as of 1 March 2012)

The Swiss Federal Council,

on the basis of Article 13 paragraph 1 and Article 39 paragraph 1 of the
Environmental Protection Act of 7 October 1983¹,

ordains:

Section 1: General Provisions

Art. 1 Purpose

This Ordinance is intended to protect audiences from exposure to harmful sound levels and laser beams.

Art. 2 Scope

¹ This Ordinance applies to indoor and outdoor events at which the audience is exposed to electroacoustically generated or amplified sound, or at which laser beams are produced.

² It does not apply to infrasound or ultrasound.

³ Military events organised for the general public are governed by the Armed Forces Act of 3 February 1995².

Art. 3 Information

¹ The Federal Office of Public Health (FOPH) shall provide information on harmful sound levels and laser beams and shall recommend appropriate measures for reducing the associated health risks.

² The cantons shall support the Federal Office in these efforts.

AS 2007 1307

¹ SR 814.01

² SR 510.10

Section 2: Sound Levels

Art. 4³ Hourly level

The hourly sound level $L_{Aeq,1h}$ (hourly level) is defined as the A-weighted equivalent continuous sound level L_{Aeq} in dB(A), averaged over a period of 60 minutes.

Art. 5 Limiting of emissions

¹ Event organisers must ensure that sound emissions are limited to such an extent that exposures arising from the event do not exceed the hourly level of 93 dB(A) at any time during the event.⁴

² Events with higher exposures are permissible, provided that the requirements of Article 6 or 7 are complied with.

³ At events intended primarily for children or young people under 16 years of age, exposures higher than 93 dB(A) are not permissible.⁵

Art. 5a⁶ Maximum sound level

The maximum sound level L_{AFmax} (frequency weighting A, time weighting Fast F, time constant $\tau_{in} = 125$ milliseconds) of 125 dB(A) must not be exceeded at any time during the event.

Art. 6⁷ Events with an hourly level between 93 dB(A) and 96 dB(A)

Organisers of events with an hourly level between 93 dB(A) and 96 dB(A) must ensure that:

- a. sound emissions are limited to such an extent that exposures do not exceed the hourly level of 96 dB(A);
- b. *Repealed*
- c. notices are prominently displayed at the entrance to the event, informing the audience that:
 1. the maximum hourly level is 96 dB(A),
 2. there is a risk of hearing damage associated with high sound levels, which increases with the period of exposure;

³ Amended by No I of the Ordinance of 15 Feb. 2012, in force since 1 March 2012 (AS 2012 793).

⁴ Amended by No I of the Ordinance of 15 Feb. 2012, in force since 1 March 2012 (AS 2012 793).

⁵ Amended by No I of the Ordinance of 15 Feb. 2012, in force since 1 March 2012 (AS 2012 793).

⁶ Inserted by No I of the Ordinance of 15 Feb. 2012, in force since 1 March 2012 (AS 2012 793).

⁷ Amended by No I of the Ordinance of 15 Feb. 2012, in force since 1 March 2012 (AS 2012 793).

- d. hearing protectors complying with SN EN 352-2:2002⁸ are available free of charge; and
- e. the hourly level is monitored during the event with a sound level meter, as specified in Number 2.1 of the Annex.

Art. 7⁹ Events with an hourly level
between 96 dB(A) and 100 dB(A)

¹ Organisers of events with an hourly level between 96 dB(A) and 100 dB(A) which last no longer than three hours must ensure that:

- a. sound emissions are limited to such an extent that exposures do not exceed the hourly level of 100 dB(A);
- b. notices indicating that the maximum hourly level is 100 dB(A) are prominently displayed at the entrance to the event; and
- c. the requirements specified in Article 6 letter c number 2 and letters d and e are met.

² Organisers of events with an hourly level between 96 dB(A) and 100 dB(A) which last longer than three hours must ensure that:

- a. the requirements specified in paragraph 1 are met;
- b. sound levels are recorded throughout the event, as specified in Number 1.3 of the Annex;
- c. the sound level recording data and details of the measuring position, determination position and sound level difference, as specified in Number 1.1 paragraph 2 of the Annex, are retained for 30 days and submitted to the enforcement authority on request; and
- d. a respite area is available for members of the audience, with notices to this effect being prominently displayed at the entrance.

³ Respite areas must meet the following requirements:

- a. The hourly level must not exceed 85 dB(A).
- b. They must make up at least 10 per cent of the total area provided for the audience at the event.
- c. They must be clearly marked and readily accessible to members of the audience throughout the event.

⁸ SN EN 352-2:2002, Hearing protectors. General requirements – Part 2: Ear-plugs. This technical standard can be consulted free of charge at the Federal Office of Public Health, CH-3003 Bern, or purchased from the Swiss Association for Standardization, Bürglistrasse 29, CH-8400 Winterthur; www.snv.ch

⁹ Amended by No I of the Ordinance of 15 Feb. 2012, in force since 1 March 2012 (AS 2012 793).

Art. 7a¹⁰ Events with several parts

If an event comprises several parts with hourly levels in excess of 93 dB(A), the requirements specified in Articles 6 and 7 are to be complied with for the event as a whole.

Art. 8 Notification requirements

¹ The organisers of events of the type specified in Articles 6 and 7 must provide the enforcement authority with written notification of the event at least 14 days in advance. The notification must include details of:

- a. the venue and type of event;
- b.¹¹ the maximum hourly level;
- c. the date, start and duration of the event;
- d. the name and address of the organiser;
- e. the name and contact details of the responsible person at the event;
- f. if appropriate, the use of the special measurement and calculation procedure specified in Number 1.4 of the Annex.

² In addition, for events of the type specified in Article 7 paragraph 2, a plan of the venue must be submitted, indicating the location, size and marking of the respite area.

Art. 9 Determination of exposure levels

¹ The measurement and calculation procedures used to determine exposure levels are specified in the Annex.

² The organiser's measuring instruments must meet the requirements specified in Number 2.1 of the Annex.

¹⁰ Inserted by No I of the Ordinance of 15 Feb. 2012, in force since 1 March 2012 (AS 2012 793).

¹¹ Amended by No I of the Ordinance of 15 Feb. 2012, in force since 1 March 2012 (AS 2012 793).

Section 3: Laser Beams

Art. 10 Basic principle

¹ Organisers of events at which laser products are used must ensure that they are set up and operated in such a way that:

- a.¹² the requirements of the technical report IEC¹³ 60825-3:2008 on the safety of laser products¹⁴ are met;
- b. the audience is not subjected to harmful exposures.

² In particular:

- a.¹⁵ laser products of Classes 1M, 2M, 3R, 3B and 4, as defined in Clauses 8 and 9 of SN EN 60825-1:2007¹⁶, must be fitted with an easy-to-operate emergency shut-off switch that immediately terminates laser radiation;
- b. laser products must be secured in such a way that they cannot be dislodged by crowd movements, vibrations or gusts of wind;
- c. no repairs or other tasks such as readjustment or correction of the beam path may be carried out on laser products during an event.

³ Exposures are deemed to be harmful if they exceed the maximum permissible exposure values specified for direct ocular exposure to laser radiation at the cornea in Table A.1 of SN EN 60825-1:2007 on the safety of laser products^{17,18}

⁴ Exposures are deemed not to be harmful if the beams emitted by laser products do not pass directly or indirectly within the audience zone, i.e. the space up to 3 m above and 2.5 m to the side of areas reserved for the audience.

¹² Amended by No I of the Ordinance of 15 Feb. 2012, in force since 1 March 2012 (AS 2012 793).

¹³ International Electrotechnical Commission

¹⁴ IEC 60825-3:2008, Safety of laser products – Part 3: Guidance for laser displays and shows.

This technical standard can be consulted free of charge at the Federal Office of Public Health, CH-3003 Bern, or purchased from Electrosuisse, Luppenstrasse 1, CH-8320 Fehraltorf; www.normenshop.ch.

¹⁵ Amended by No I of the Ordinance of 15 Feb. 2012, in force since 1 March 2012 (AS 2012 793).

¹⁶ SN EN 60825-1:2007, Safety of laser products – Part 1: Equipment classification and requirements.

This technical standard can be consulted free of charge at the Federal Office of Public Health, CH-3003 Bern, or purchased from Electrosuisse, Luppenstrasse 1, CH-8320 Fehraltorf; www.normenshop.ch.

¹⁷ SN EN 60825-1:2007, Safety of laser products – Part 1: Equipment classification and requirements.

This technical standard can be consulted free of charge at the Federal Office of Public Health, CH-3003 Bern, or purchased from Electrosuisse, Luppenstrasse 1, CH-8320 Fehraltorf; www.normenshop.ch.

¹⁸ Amended by No I of the Ordinance of 15 Feb. 2012, in force since 1 March 2012 (AS 2012 793).

Art. 11 Notification requirements

¹ For events involving Class 1M, 2M, 3R, 3B or 4 laser products, the organiser must provide the enforcement authority with written notification at least 14 days in advance.

² In particular, the notification must include the following details and documents:

- a. the venue and type of event;
- b. the date, start and duration of the event;
- c. the name and address of the organiser;
- d. the location and time of use of the laser products;
- e. the classification of the laser products to be used;
- f. information on whether laser beams are to pass directly or indirectly within the audience zone during the event;
- g.¹⁹ a plan of the venue, indicating the audience zone and the position of all laser projectors, including the minimum distance to the audience zone;
- h. the name and contact details of the responsible person at the event;
- i.²⁰ the specifications of each laser projector (minimum distance to the audience zone, maximum total output power for exposure of the audience zone, minimum beam divergence, beam diameter and wavelengths).

Section 4: Enforcement**Art. 12** Enforcement authority

The cantons are responsible for enforcing this Ordinance.

Art. 13 Review of notifications

The enforcement authority shall review notifications to ensure that they are complete. If any information is missing, the authority shall request the organiser to provide it without delay.

Art. 14 Measurements and inspections

¹ The enforcement authority shall conduct spot checks to verify compliance with notification requirements, the relevant sound levels and the other requirements specified in Articles 5, 6, 7 and 10.

² The enforcement authority's measuring instruments must meet the requirements specified in Number 2.2 of the Annex.

¹⁹ Amended by No I of the Ordinance of 15 Feb. 2012, in force since 1 March 2012 (AS 2012 793).

²⁰ Inserted in accordance with No I of the Ordinance of 15 Feb. 2012, in force since 1 March 2012 (AS 2012 793).

Art. 15 Measures

¹ If, on the basis of the notification, it is evident in advance that the requirements of this Ordinance will not be met, the enforcement authority shall order the necessary measures or prohibit the event.

² If measurements or inspections during the event indicate that the relevant sound levels are being exceeded, or that the duty to protect the audience is not being fulfilled, the enforcement authority shall instruct the person responsible for the event to limit the sound emissions or take any other measures required.

³ In the event of repeated violations of this Ordinance, the enforcement authority may request the installation of electronic systems for the monitoring or limiting of sound levels.²¹

Art. 16 Costs

Event organisers shall bear the costs of measurements, inspections and other services provided by the enforcement authorities.

Section 5: Final Provisions**Art. 17** Repeal of current legislation

The Sound Level and Laser Ordinance of 24 January 1996²² is repealed.

Art. 18 Transitional provisions

Legally valid relief granted under current legislation applies for no longer than two years after this Ordinance comes into force.

Art. 19 Commencement

This Ordinance comes into force on 1 May 2007.

²¹ Amended by No I of the Ordinance of 15 Feb. 2012, in force since 1 March 2012 (AS 2012 793).

²² [AS 1996 807]

*Annex*²³

(Art. 6 let. e, Art. 7 para. 2, Art. 9, Art. 14 para. 2)

Measurement and calculation procedures and requirements for measuring equipment

1 Measurement and calculation procedures

1.1 Basic principle

¹ Sound exposures are to be determined at ear level at the point where the audience is exposed to the highest sound levels (determination position).

² If the measuring position is not the same as the determination position, the exposures must be corrected accordingly. The measuring position, the determination position and the difference in sound level between these two positions must be recorded in writing.

³ The sound level is averaged over a period of one hour (equivalent continuous sound level). The averaging period starts at any time during the event and lasts for 60 minutes without interruption. The equivalent continuous sound level must not exceed the sound level limit at any point during the event.

1.2 Measurement procedure

The measuring equipment used to measure the sound level is operated with the following settings:

- a. Frequency weighting A;
- b. Time weighting Fast (F) (time constant $t_{\text{ein}} = 125$ milliseconds).

1.3 Sound level recording

The sound level recording specified in Article 7 paragraph 2 letter b must meet the following requirements:

- a. The equivalent continuous sound level averaged over a period of 5 minutes $L_{\text{Aeq},5\text{min}}$ must be recorded at least every 5 minutes during the event.
- b. The measurement data, together with the exact time of measurement, must be recorded in electronic form.

²³ Corrected by No I 2 of the Ordinance of 8 Sept. 2010 on the Amendment of Provisions concerning Sound Measuring Instruments (AS 2010 4489) and No II of the Ordinance of 15 Feb. 2012, in force since 1 March 2012 (AS 2012 793).

1.4 Special measurement and calculation procedure

¹ The sound level is measured at the mixing desk if the following conditions are satisfied:

- a. The mixing desk is located within the audience zone directly exposed to sound.
- b. The high- and middle-frequency loudspeakers are positioned in such a way that the audience is uniformly exposed to sound.
- c. The microphone for sound level monitoring is permanently positioned at ear level at the mixing desk.
- d. The difference in sound level between the mixing desk (measuring position) and the determination position specified in Number 1.1 paragraph 1 is ascertained by means of a defined wide band signal (pink noise/programme simulation noise as defined in IEC-60268-1²⁴) or another equivalent method.
- e. The determination position and sound level difference, and the method used, are recorded in writing.
- f. The special measurement and calculation procedure has been notified in accordance with Article 8.

² With these measurements, the limit applicable for the event is deemed to be complied with if the value measured at the mixing desk plus the sound level difference is less than or equal to the limit.

2 Requirements for measuring equipment

2.1 Organisers' measuring equipment

The organisers' measuring equipment shall meet the following requirements:

- a. it must be capable of measuring the A-weighted sound level L_A ;
- b. it must be capable of determining the equivalent continuous sound level L_{Aeq} directly or indirectly.

2.2 Enforcement authorities' measuring equipment

¹ The measuring instruments used by the enforcement authorities to measure sound exposures (Article 14 paragraph 2) are governed by the Measuring Instruments Ordinance of 15 February 2006²⁵ and the associated implementing regulations issued by the Federal Department of Justice and Police.

²⁻⁵ *Repealed*

²⁴ IEC 60268-1:1985, Sound system equipment. Part 1: General. The technical standards referred to in this Annex can be consulted free of charge at the Federal Office of Public Health, CH-3003 Bern, or purchased from Electrosuisse, Luppenstrasse 1, CH-8320 Fehraltorf or online at www.electrosuisse.ch.

²⁵ SR 941.210

