

Laser Light Show and Demonstration Safety

Bureau of Radiation Control
Compliance Binder

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^{LL} Laser Light Show ONLY

This template serves as a model route of achieving compliance. The use of this template is advised but not required by the Department.

Department Contact Information

Non-Ionizing Compliance

Phone: 602-255-2515

email: nonion@azdhs.gov

Bureau of Radiation Control

4814 South 40th Street

Phoenix, AZ 85040

Office: 602-255-4845

Web: www.azdhs.gov/nonion



Attach copy of
Inspectors
business card
here for direct
contact.

Section 1. Guidance on Application for Registration

Facility Type	Payment to submit			Forms to submit						Ref.
	Fee Category	Charge per Fee Category	Fee Category Definition/Calculation	BRC-NIR (one per location)	BRC-NIMI (one per unit)	Medical Director Acknowledgment; <i>Include License & Training Record</i>	LSO Acknowledgement; <i>Include Training Record</i>	Operator Training, FDA Variance, FAA Variance, & Show Details	Registration Division	Registration can be combined with:
Ultraviolet Tanning (UT) Ultraviolet Medical (UM)	F1	\$50	Per Unit	✓	✓				II	-
Laser Industrial (LI) Laser Projector (LP)	F2	\$300	1-10 units	✓	✓		✓ ✓		III	-
	F3	\$600	11-49 units	✓	✓		✓ ✓		II	-
	F4	\$1,000	50+ units	✓	✓		✓ ✓		I	-
Laser Light Show (LL)	F5	\$500	Site fee	✓	✓		✓ ✓	✓	II	-
Laser Medical (LM) -Includes: Chiro, Optham, Pod Laser Hospital (LH) Laser Dental (LD) Laser Veterinary (LV)	F6	\$100	Per Unit	✓	✓	✓ ✓	✓ ✓		II	F12
Laser Cosmetic (LC) -Includes: Cosmetic use OR Cosmetic and Medical use	F7	\$100	Per Unit	✓	✓	✓ ✓	✓ ✓		II	F8, F12
Cosmetic Radiofrequency (RC)	F8	\$100	Per Unit	✓	✓	✓ ✓			II	F7
Industrial Radiofrequency (RF) -Includes: RF, Microwave	F9	\$150	1-5 units	✓	✓				III	-
	F10	\$350	6-20 units	✓	✓				II	-
	F11	\$600	21+ units	✓	✓				II	-
Medical Radiofrequency (RM) -Includes: RF, EC, Diathermy	F12	\$100	Site fee	✓	✓	✓ ✓			II	F6, F7

All forms are available on our website AZDHS.GOV/NONION under Nonionizing Forms

Note: Appropriate and full payment must be included with new registrations. We currently do not have the ability to accept new applications online, so please send your COMPLETE new application with payment via physical mail.

Section 2. Required Postings (There are 3 in total)

1. Include a copy of your Registration after this page, in addition to its posting on the wall.

Reference Image of Registration:

2. Post this notice in an area all employees have access to.

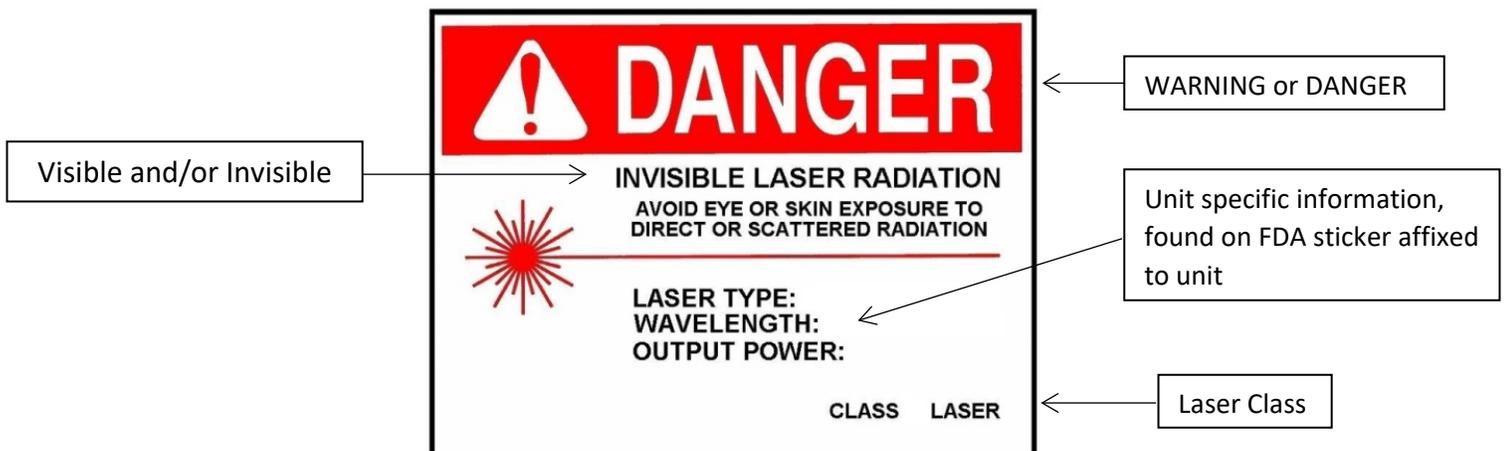
Reference Image of Notice to Employees:

Note: if you need a copy of your registration or notice to employees, please contact our office. We will send you one free of charge.

3. Per A.A.C R9-7-1429, a Laser Danger Sign must be posted in the area(s) in which the laser is in use.
 - a. Sign must be labeled with the following:
 - i. “Invisible” and/or “Visible” Laser Radiation
 - ii. “Warning” or “Danger”
 - iii. Appropriate wavelength/power/class

Sign must follow ANSI format. (Link to generate your own compliant Danger Sign below)

<http://lasertraining.org/DangerSigns.html>



⇒ NOTE: ONLY POST LASER SIGN WHEN LASER IS IN USE ⇐

Section 5. Injury Reporting Policy and Injury Reports

WHAT TO INCLUDE IN THIS SECTION

1. Laser Injury Reporting Policy (Included on following page. Must be signed).
2. Copy of all injury reports.
3. Record of correspondence with the Department pertaining to any reported injuries sustained at this facility.



Laser Injury Reporting Policy

In accordance with A.A.C. R9-7-1436

- A. A registrant shall notify the Department by telephone within 24 hours of any incident that has caused or may have caused:
 - 1. Permanent loss of sight in either eye; or
 - 2. Third-degree burns of the skin involving more than 5 percent of the body surface as estimated by the rule of nines.
- B. A registrant shall notify the Department by telephone within five working days of any incident that has or may have caused:
 - 1. Any second-degree burn of the skin larger than one inch (2.54 centimeter) in greatest diameter; or
 - 2. Any third-degree burn of the skin; or
 - 3. An eye injury with any potential loss of sight.
- C. Each registrant shall file a written report with the Department of any known exposure of an individual to laser radiation or collateral radiation within 30 days of its discovery, describing:
 - 1. Each exposure of the individual to laser or collateral radiation that exceeds the applicable MPE; and
 - 2. Any incident that triggered a notice requirement in subsections (A) or (B).
- D. Each report required by subsection (C) shall describe the extent of exposure to each individual including:
 - 1. An estimate of the individual's exposure;
 - 2. The level of laser or collateral radiation involved;
 - 3. The cause of the exposure; and
 - 4. The corrective steps taken or planned to prevent a recurrence.

Submit all necessary exposure reports to:

BUREAU OF RADIATION CONTROL
 Nonionizing Compliance Program
NONION@AZDHS.GOV

As the Laser Safety Officer, I attest that I have read the above laser injury reporting requirements and will uphold this responsibility assigned by my title to implement it fully for this registration.

Facility Name

Registration Number

LSO Printed Name and Title

LSO Signature

Date Position Assumed

NOTE: Complete this document and maintain it in your radiation safety program file. It will be reviewed during your unannounced State audits.

Section 6. Training Records

WHAT TO INCLUDE IN THIS SECTION

1. Training records for all operators
2. Training record for the Laser Safety Officer

Training Guidance:

- Operator training may be obtained anywhere (training institution, peer training, in-service, etc...) as long as the event is approved by the Laser Safety Officer.
- Laser Safety Officer may be obtained anywhere as long as it follows the required curriculum provided in Appendix D of Article 14 of the Bureau's rules on Nonionizing Radiation. (Provided at the end of this compliance binder for reference)

A.A.C. R9-7-1403. General Safety Provisions

(B.) The registrant shall:

- (1.) Ensure that any nonionizing source is operated by an individual who is trained and has demonstrated competence in the safe use of the source.*
- (2.) Provide safety rules to each individual who operates a nonionizing radiation source and determine whether the individual is aware of operating restrictions and procedures associated with the safe use of the source.*
- (3.) Make, or cause to be made, any physical radiation surveys required by this Article.*
- (4.) Maintain the following records for three years for Department review:*
 - (a.) Results of any physical survey or calibration required by this Article;*
 - (b.) Radiation source inventories;*
 - (c.) Maintenance, service, and modification records; and*
 - (d.) Incident reports of known or suspected exposure to nonionizing radiation that exceeds any MPE specified in this Article.*

Section 7. Show Notice Requirements

(Required for Laser Light Show registrations only)

WHAT TO INCLUDE IN THIS SECTION

Maintain a chronological record of all Show Notices submitted to the Department dating back three (3) years.

How and When to Submit a Show Notice:

Submit the BRC Show Notice Form at least three (3) working days before a proposed laser light show or demonstration. The submission must be complete and include all required attachments or the show will not be approved.

Form located at [AZDHS.GOV/NONION](https://www.azdhs.gov/nonion) under NONIONIZING FORMS

Submit via email to NONION@AZDHS.GOV

Arizona Bureau of Radiation Control

Directions: Complete this form entirely and submit all required attachments AT LEAST THREE (3) WORKING DAYS before a proposed laser light show or demonstration. If the submission is incomplete, the application for the proposed activity will be returned to you and the show will not be approved. Submit all notices to NONION@AZDHS.GOV

Section 1. Registration/Contact Information

Registration Number		Or <input type="checkbox"/> Part of Application for NEW Registration
Company Name		
Street Address		
City, State, Zip		
Contact Name, Email & Phone		

Section 2. Proposed Activity Details

Location Address(s)	Date(s)	Time(s)	Indoor (I) or Outdoor (O)

You may attach additional locations, dates, and times if needed

Section 2. GENERAL Show Notice Details

The following attachments are included with this form:

- Food and Drug Administration (FDA) Notice of Variance from 21 CFR 1040.11(c).
- Sketches or diagrams showing the locations of each laser, operator, performer, laser beam path, viewing screen, wall, mirror, or any other reflective or diffuse surface that could be hit by or reflect the laser beam.
- Scanning beam patterns, scan velocity, and frequency in occupied areas.
- Physical surveys and calculations made to comply with Arizona Administrative Code, Title 9, Chapter 7, Article 14: *Registration for and Standards for Protection Against Nonionizing Radiation*.
- Any additional information the Department may need to evaluate the safety of the proposed activity.

Section 3. SPECIFIC Show Notice Details

If you selected OUTDOOR for any shows in 'Section 2.' attach the following with your submission:

- No outdoor shows will occur.
- All outdoor laser beams will be terminated in non-navigable airspace. No FAA notification required.
- Outdoor laser beams will not be terminated. Federal Aviation Administration (FAA) Notice of Aeronautical Review indicating no objections to the proposed activity attached.

If you will be performing any AUDIENCE SCANNING, acknowledge the following:

- No audience scanning will occur.
- A device will not be used which, as a result of scan failure or any other failure, can change its angular velocity or amplitude, permitting audience exposure to laser radiation that exceeds the applicable Class 1 accessible emission limit.

Section 4. Registration Representative Submitting this Form

Full Name & Title (Print)	
Date	

Section 8. What to Expect During an Inspection

WHAT TO INCLUDE IN THIS SECTION

No documentation requirements.

HOW TO USE THIS SECTION

Provided within is the inspection template which serves as both an outline of what to expect to be audited as well as a method of conducting internal audits for maintaining compliance between State inspections, ideally preventing violations. Each item on the template is accompanied by its corresponding A.A.C. R9-7 regulation, for reference.

Highlight Regulation References:

- FDA Laser Notices
 - Laser Illuminated Projectors (LIP) that are classified as Risk Group 3 (RG3) are equivalent to Laser Classes III-b or IV and regulated as such. [FDA Laser Notice 57; IV(d)]

- FAA Air Traffic Organization Policies
 - FAA notification not required for laser operations that are terminated and do not enter navigable airspace [FAA Order: JO 7400.2M; Part 6, Chapter 29, Section 1]

Section 9. Department Correspondence

WHAT TO INCLUDE IN THIS SECTION

File any correspondence with the Department in this section.

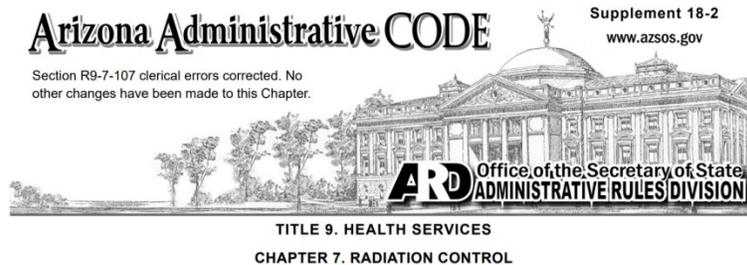
Examples of Department Correspondence include:

- *Any forms, applications, etc..., that you submit to our office*
- *Any notices we send you*
- *Notice of Preliminary Findings*
- *Notice of Violation*
- *Notice of Compliance*
- *Deficiency Notices*
- *Courtesy Renewal, Amendment, etc., Reminders*
- *Etc...*

Section 10. Nonionizing Rules

Available online at:

https://apps.azsos.gov/public_services/Title_09/9-07.pdf



As a registrant in possession of any radiation source, both material and machine, you are subject to any and all applicable regulations within the Arizona Administrative Code, Title 9, Chapter 7. Visit the Rules tab of our website to access “A.A.C. Title 9, Chapter 7” to view the full chapter.

As a guidance for nonionizing registrants, identified below are the broad sections of 9 A.A.C. 7 Article 14, Registration of Nonionizing Radiation Sources and Standards for Protection Against Nonionizing Radiation:

- **1401: Registration**
- **1402: Definitions**
- **1403: General Safety Provisions**
- 1404-1410: Radiofrequency (RF), and RF Incidents
- 1412-1416: Ultraviolet Tanning (UV), and UV Incidents
- **1421-1436: Laser Safety, and Laser Incidents**
- 1437: Special Lasers
- 1438-1438.01: Cosmetic Use Lasers (also subject to 1440)
- 1439: Laser and IPL Training Programs
- 1440: Medical Use Lasers
- **1441: Laser Light Show Demonstrations**
- *1442-1444: Laser MPE, Measurement Instrumentation, and Classification Measurements*
- Appendix C: Subjects taught by a Laser and IPL Training Program
- **Appendix D: Subjects taught by a Laser Safety Officer (LSO) Training Course**

Appendix D: Laser Safety officer Training Curriculum

9. A.A.C. 7. Article 14, Appendix D

(1.) Operators and personnel that work around lasers:

- (a.) Fundamentals of laser operation (for example: physical principles, construction, and other basic information)
- (b.) Bioeffects of laser radiation on the eye and skin
- (c.) Significance of specular and diffuse reflections
- (d.) Non-beam hazards of lasers (for example: electrical, chemical, and reaction byproducts)
- (e.) Ionizing radiation hazards (includes information regarding x-rays from power sources and target interactions, if applicable)
- (f.) Laser and laser system classifications
- (g.) Control measures
- (h.) Responsibilities of managers and operators
- (i.) Medical surveillance practices (if applicable)
- (j.) CPR for personnel servicing lasers with exposed high voltages, the capability of producing potentially lethal electrical currents, or both.

(2.) The LSO or other individual responsible for the safety program, evaluation of hazards, and implementation of control measures, or any others, if directed by management to obtain a thorough knowledge of laser safety:

- (a.) The subjects covered in subsection (1)
- (b.) Laser terminology
- (c.) Laser types, wavelengths, pulse shapes, modes, power and energy
- (d.) Basic radiometric units and measurement devices
- (e.) MPE levels for eye and skin under all conditions
- (f.) Laser hazard evaluations, range equations, and other calculations

(3.) Technical Considerations

- (a.) Laser and IPL device descriptions
- (b.) Definitions
- (c.) Laser and IPL device radiation fundamentals
- (d.) Laser mediums, types of lasers, and other light-emitting devices (includes information regarding diodes and solid, liquid, gas, and IPL devices)
- (e.) Biological effects of laser or IPL device light
- (f.) Damage mechanisms
 - (i.) Eye hazard
 - (ii.) Skin hazard (includes information regarding skin type and skin anatomy)
 - (iii.) Absorption and wavelength effects
 - (iv.) Thermal effects
- (g.) Photo chemistry
- (h.) Photosensitive medications
- (i.) Criteria for setting the Maximum Permissible Exposure (MPE) levels for eye and skin associated hazards
- (j.) Explosive, electrical, and chemical hazards
- (k.) Fire, ionizing radiation, cryogenic hazards, and other hazards as applicable.