



# DUBAI AVIATION CITY CORPORATION OHSE CODE OF PRACTICES



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DACC CODE OF PRACTICE - SELLING OF LASER  
PRODUCTS



SELLING OF LASER PRODUCTS  
DACC (DUBAI SOUTH) Code of Practice  
Document Reference No.: DACC.DS.OPS.OHSE.OPS.15.LP

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1.0	INTRODUCTION	3
2.0	TRAINING AND AWARENESS	5
3.0	REQUIREMENTS	6
4.0	RECORD KEEPING	9
5.0	REFERENCES	9



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## 1.0 INTRODUCTION

- (i) This Code of Practice (CoP) is mandatory to all operational facilities within the Dubai South jurisdiction that generate waste, whether potentially hazardous or non-hazardous. This CoP is designed to incorporate requirements set by UAE and other relevant Regulatory authorities. If requirements of this document conflict with requirements set by another regulatory authority, operational facilities are required to follow the more stringent requirement.
- (ii) This CoP establishes the interim minimum requirements and standards for the selling of laser products by entities so that the risks associated with it are assessed, that control measures are implemented in accordance with the OHSE hierarchy of controls, as per Dubai Aviation City Corporation (DACC) OHSERF - Regulation 2-Risk Management.
- (iii) Operational facilities means the business units such as Factories, Logistics and Warehouse Facilities, Recreational Facilities, Multi Store Apartments, Retail Facilities, Offices, Educational Institutions, Medical Facilities, etc. and all other facilities which are registered under Dubai Aviation City Corporation (DACC) Licensing and Registration Department and operating in Dubai South Jurisdiction.
- (iv) A duty Holder is defined as;
  - a) the person(s) who owns or is in control, through contact or tenancy, of non-domestic premises;
  - b) With regard to multiple tenanted premises, the duty holder shall be the person who owns or is in control of the building, including access and egress
  - c) All other persons shall cooperate with the with the duty holder to allow them to comply with their duties requirements under this CoP.
- (v) The main objective of this standard are to control the distribution in the local market of laser pointers that are not approved or compliance to International Standard adopted by the Local Government and guide the Consumers on what to look at on a product before purchasing any items, and to give awareness to the Public about the proper use of laser pointers and its effect if not handled on its intended use.
- (vi) Lasers are special optical systems which are able to generate a highly concentrated beam of non-ionizing radiation which does not diverge. This produces characteristics of very high brightness and coherence. Because of their high energy, lasers have the ability to physically destroy tissue by rapid conversion to heat energy as they interact with matter. Reflected laser radiation, even from dark surfaces, is as hazardous as direct rays because it does not lose energy by divergence. Most common laser products available in the market nowadays are laser pointers. Laser pointers are very useful tools when highlighting key areas during visual presentations. When used in a responsible manner, laser pointers are not considered to be hazardous. However, due to the low cost and ubiquitous supply of these laser pointers can now be easily purchased by the general public, including children, and may be used in ways are not intended. And as a result, serious concerns of about for safe use of these laser pointers were raised.
- (vii) The specification mentioned herein relates to the possible hazards that may not be recognized readily by the public and that may be encountered in the normal use or after reasonably foreseeable abuse. This guideline does not cover products performance or quality, except as related to safety. Although this guidelines concentrates on lasers devices, it should be noted that other bright directional lights such as searchlights and spotlights may have the same dazzling/distracting / flash blinding effect. Operators of searchlights, spotlights and the like should take the same basic precautions as lay down in this guideline.



SELLING OF LASER PRODUCTS  
DACC (DUBAI SOUTH) Code of Practice  
Document Reference No.: DACC.DS.OPS.OHSE.OPS.15.LP

(viii) Definition of Terms

- a) **Accessible Emission Level** means the magnitude of accessible laser or collateral radiation of a specific wavelength and emission duration at a particular point as measured.
- b) **Accessible emission limit** means the maximum accessible emission level permitted within a particular class as set forth.
- c) **Laser means** any device that can be made to produce or amplify electromagnetic radiation at wavelengths greater than 250 nm but less than or equal to 13,000 nm or, after August 20, 1986, at wavelengths equal to or greater than 180 nm but less than or equal to  $1.0 \times 10^6$  nm primarily by the process of controlled stimulated emission.
- d) **Laser product** means any manufactured product or assemblage of components which constitutes, incorporates, or is intended to incorporate a laser or laser system. A laser or laser system that is intended for use as a component of an electronic product shall itself be considered a laser product.
- e) **Laser system** means a laser in combination with an appropriate laser energy source with or without additional incorporated components.
- f) **Protective housing** means those portions of a laser product which are designed to prevent human access to laser or collateral radiation in excess of the prescribed accessible emission limits under conditions specified in this standard.
- g) **Safety interlock** means a device associated with the protective housing of a laser product to prevent human access to excessive radiation.
- (ix) **Laser Classification and Hazards:** Lasers are classified according to its Accessible Emission Levels (AEL) measured in mW. The classes are based upon a scheme of graded risk. They are based upon the ability of a beam to cause biological damage to the eye or skin.

Lasers and laser systems are assigned one of four broad Classes depending on the potential for causing biological damage. Some biological hazard classes are summarized here:



SELLING OF LASER PRODUCTS  
DACC (DUBAI SOUTH) Code of Practice  
Document Reference No.: DACC.DS.OPS.OHSE.OPS.15.LP

Class FDA	Class IEC	Laser Product Hazard	Product Examples
I	1, 1M	- Considered non-hazardous. Hazard increases if viewed with optical aids, including magnifiers, binoculars, or telescopes.	<ul style="list-style-type: none"> <li>• laser printers</li> <li>• CD players</li> <li>• DVD players</li> </ul>
IIa, II	2, 2M	- Low power visible lasers. - Hazard increases when viewed directly for long periods. Hazard increases if viewed with optical aids.	<ul style="list-style-type: none"> <li>• bar code scanners</li> </ul>
IIIa	3R	- Intermediate power lasers. - Depending on power and beam area, can be momentarily hazardous when directly viewed or when staring directly at the beam with an unaided eye. Risk of injury increases when viewed with optical aids.	<ul style="list-style-type: none"> <li>• laser pointers</li> </ul>
IIIb	3B	- Moderate power lasers. - Immediate skin hazard from direct beam and immediate eye hazard when viewed directly.	<ul style="list-style-type: none"> <li>• laser light show projectors</li> <li>• industrial lasers</li> <li>• research lasers</li> </ul>
IV	4	- High power lasers. - Immediate skin hazard and eye hazard from exposure to either the direct or the reflected beam; may also present a fire hazard.	<ul style="list-style-type: none"> <li>• laser light show projectors</li> <li>• industrial lasers</li> <li>• research lasers</li> <li>• lasers used to perform LASIK eye surgery</li> </ul>

## 2.0 TRAINING AND AWARENESS

- (i) Duty Holder shall ensure that OHSE training complies with the requirements of Dubai Aviation City Corporation (DACC) OHSERF - Regulations 6 – Competence Management, Training and Awareness;
- (ii) Duty Holder shall ensure personnel required to implement the requirements of this CoP are trained in the requirements and understand the risks associated with waste handling and disposal and the control measures put in place by the employer.
- (iii) User Information: instructions for operation and maintenance, with appropriate warnings to avoid exposure;
- (iv) Radiation specifications; reproduction and locations of labels that are required by the standard and that are accessible during operation and maintenance; a listing of all controls and adjustments; and a caution statement, as specified in the regulations\*, concerning possible hazardous exposure if instructions are not followed. (Note: if this warning statement is not appropriate to the product, manufacturer may request approval of a more specific warning better suited to the said product).
- (v) Brochures and Specification Sheets: Must include a reproduction (color optional) of a complete warning logotype or Class IIa warning statement as required on the product.
- (vi) Servicing Information: procedures for service with appropriate warnings to avoid exposure. A schedule of maintenance to maintain the product in compliance. A listing of controls that could increase the level of accessible radiation. Identification of removable portions of protective housings. Procedures to avoid exposure; and Reproduction of required labels (color optional) and warnings. At the discretion of the manufacturer, user and service information may or may



SELLING OF LASER PRODUCTS  
DACC (DUBAI SOUTH) Code of Practice  
Document Reference No.: DACC.DS.OPS.OHSE.OPS.15.LP

not appear in the same manual. Service procedure, however, must be clearly identified as such. In many cases, the classification of a given procedure as maintenance or service determines whether a safety interlock is required.

### 3.0 REQUIREMENTS

#### 3.1 Roles and Responsibilities

##### 3.1.1 The Duty Holder (Distributors and Retailers ) shall:

- (i) Ensure that all laser products (including bright lights) have proper documents pertaining to the product being sold.
- (ii) Have Dubai South No Objection Certificate for Activity Verification. Type/kind of laser products (or bright lights) must be specified.
- (iii) Not sell/ distribute any laser products that falls under Class 3 and above unless authorized by the relevant governing authority.
- (iv) Not sell/ distribute laser toys or toys with laser components with Class 3 and above.
- (v) Not sell/ distribute any laser toys or toys with laser components that may cause danger to the public or the user.
- (vi) Not sell any laser products to anyone below 18 years of age.
- (vii) Maintain distribution records to permit tracing in the event of recall.

##### 3.1.2 Regulatory and Other Hazard Reduction Measures

- (i) Restricting the sale or establish tighter controls on the use of certain laser devices specially those laser devices that falls under Class III because these devices are widely available at low cost and are used in a variety of applications such as laser pointers, laser levels, and laser gun sights.
- (ii) Requiring review or approval of outdoor laser uses. For all laser users, the American National Standard Institute (ANSI) Z 136.1 to Z 136.3 gives guidance for the safe use of outdoor lasers.
- (iii) expanding and enforcing laser free zones around airports
- (iv) Discourage online sales of illegal lasers and online video demonstrations that describe how to modify a laser pointer to make it powerful.
- (v) Permanent Warning Labels. Laser pointers especially those above 5mW should have permanent label or engraving with text such as “NEVER point at or near any aircraft”. In addition, an education sheet discussing safe laser pointer user should be included with each order or shipment.
- (vi) Educating the public regarding the risks of lasers to aviation safety through Media Campaign/Advertisement and instructions for safe use of equipment



SELLING OF LASER PRODUCTS  
DACC (DUBAI SOUTH) Code of Practice  
Document Reference No.: DACC.DS.OPS.OHSE.OPS.15.LP

### 3.1.3 Determining the Class of Laser during Inspection

- (i) The classification of a laser or laser product is, in some instances, a rather detailed process. It can involve determination of the AEL, measurement of the laser emission, measurement/determination of the emission pulse characteristics (if applicable), and evaluation of various performance requirements (protective housing, interlocks, etc.).
- (ii) It should be stressed that classification is a required specification provided by the laser manufacturer and the label that specifies the class is found in only one location on the laser product. The class of the laser will be specified only on the lower left-hand corner (position three) of the warning logotype label. The logotype is the rectangular label that has the laser "sunburst" symbol and the warning statement of CAUTION (Class II and some Class IIIA) or DANGER (some Class IIIA, all Class IIIB and Class IV).
- (iii) Class I lasers have no required labeling indicating the Class I status.

**3.1.4 Product Recalls:** Manufacturers may be required to recall a laser product i.e., repair or replace it or refund its purchase price, if the product fails to comply with the standard or has a radiation defect.

**3.2 Performance Requirements:** The standard specifies the performance requirements according to the class of the laser product and the accessible laser radiation. Note that, where the standard requires a particular performance feature, the feature must be readily identifiable as such on the product. Failure to properly identify the required feature may lead to difficulties in determining the product compliance.

**3.3 Labeling Requirements:** Each laser product shall be subject to the applicable labeling requirements:

- (i) Warning logotype is required on Class II, IIIa, IIIb and IV laser products. The regulations pertaining to laser products specify the warning statement and design, by product Class, for visible radiation. If there is emission on the ultraviolet or infrared spectrum there must be a warning for invisible radiation as well.
- (ii) The CAUTION warning logotype is for Class II Laser products and for IIIa laser products that have an irradiance not exceeding  $2 \cdot 10^{-3} \text{ W cm}^{-2}$ .
- (iii) The DANGER warning is for Class IIIa laser products that have an irradiance exceeding  $2.5 \times 10^{-3} \text{ W cm}^{-2}$ , and for Class IIIb and IV laser products.
- (iv) A specific warning statement without logotype is required on Class IIa products. The warning logotype must also contain a statement of the maximum output, pulse duration (if pulsed), and the laser medium or emitted wavelength(s).
- (v) Removable or Displaceable Protective Housing That are not safety-interlocked or that have defeatable safety interlocks also requires labels. The severity of the warning depends on the type and level of the interior laser radiation. Wording is specified, invisible, electromagnetic and "X" radiation must also be indicated if present. Labeling must also be visible on the product prior to and during removal or displacement of the housing and close to the opening involved.
- (vi) Certification Label Is required and must state that the manufacturer certifies that the product complies with the standard or with an approved variance. The Certification statement must



SELLING OF LASER PRODUCTS  
DACC (DUBAI SOUTH) Code of Practice  
Document Reference No.: DACC.DS.OPS.OHSE.OPS.15.LP

appear on a label on the product and make specific reference to the regulation with which the product complies. Minimum suitable statements would include: "Complies with Title 21 Code of Federal Regulations (CFR) Subchapter J." or "Complies with 21 CFR 1040.10 and 1040.11."

- (vii) Identification Label must be provided and must contain the name and address of the manufacturer and the place, month, and year of manufacture; the month and year of manufacture may not be abbreviated. Alternate brand name, other company name, or a coded place of manufacture may be used if an explanation is provided to the concerned government body.
- (viii) All required labels must be permanently affixed to, or inscribed on, the laser product, legible, and clearly visible during operation, maintenance, or service, as appropriate. If certain labeling requirements are inappropriate or ineffective for the laser product, you may apply for approval of alternate labeling.
- (ix) All labels affixed to a laser product shall be positioned so as to make unnecessary, during reading, human exposure to laser radiation in excess of the accessible emission limits of Class I radiation or the limits of collateral radiation.

### 3.4 Specific-Purpose Products Requirements

- (i) Demonstration laser products are restricted in their outputs to Class IIIa with its accompanying restrictions to Class I for short pulses and invisible wavelengths. A general-purpose, scientific, medical or industrial laser product is not considered to be a demonstration laser product when it is demonstrated to a prospective purchaser. Demonstration Laser Products Include:
  - a) laser products promoted for classroom demonstration of optical phenomena;
  - b) artistic displays and their associated apparatus;
  - c) laser light show projectors; and
  - d) Laser light shows and displays themselves.
- (ii) Laser light show projection systems (Class II and IIIa) provide effective shows in certain venues such as nightclubs and small theaters. Although Class I, II, and IIIa laser light shows need not to be reported. A certain Laser Notice #40 was issued which provides detailed guidance with operator's instructions, in order to assure safe installation and production of safe shows. The notice discusses installation restrictions, scanning safeguards, laser power measurements, specific requirements for user instructions, and advertising.
- (iii) It is mandatory that laser projectors never expose an audience to laser radiation greater than Class I levels of radiation. A projector cannot be used for audience scanning unless it is equipped with an adequate scanning safeguard.

### 3.5 Safety Rules: The following safety rules are a few "common sense" rules recommended for laser pointers:

- (i) NEVER point a laser pointer of any power at anybody. Pointers should be used to point out or emphasize inanimate objects such as slide images, pipes, asbestos, laboratory apparatus, non-human scientific experiments, etc.
- (ii) Avoid "mirror like" (specular) targets and NEVER - NEVER stare into a pointer.
- (iii) Also, NEVER view a laser beam using an optical instrument (such as binoculars, microscope, etc.) unless the procedure has been technically reviewed and approved by appropriate safety personnel.



SELLING OF LASER PRODUCTS  
DACC (DUBAI SOUTH) Code of Practice  
Document Reference No.: DACC.DS.OPS.OHSE.OPS.15.LP

- (iv) Always use LOWEST power rating possible and highest divergence where possible. No laser pointer rated at a Class 3B should ever be used without special provisions such as a Laser Safety Plan and approval.
- (v) These laser pointers are not toys and should not be used by juveniles. However they are attractive to children. Therefore we recommend that the batteries be taken out of the pointer when not in use and that laser pointers are not to be taken home if children are present in the home.
- (vi) A laser beam shall not be directly or indirectly pointed to another person or animal in such a manner as to harass or annoy the said person or animal.
- (vii) One should NEVER use (or purchase) a laser of any type above 5mW without proper documentation / approval from Dubai South.

#### 4.0 RECORD KEEPING

- (i) The Duty Holder MUST maintain distribution records to permit tracing in the event of recall.
- (ii) The Duty Holder shall maintain distribution records as per the requirements of: Dubai South OHSSERF - Regulations 8 Document Control and Record Management

#### 5.0 REFERENCES

NO.	DOCUMENT NAME	DOCUMENT NO.
1	Risk Management	DS-OHSERF – Regulation 2
2	Leadership, Roles, Responsibility and Self-Regulation	DS-OHSERF – Regulation 5
3	Competence Management, Training and Awareness	DS-OHSERF – Regulation 6
4	Communication, Consultation and Participation	DS-OHSERF – Regulation 7
5	American National Standard Institute	(ANSI) Z 136.1 to Z 136.3
6	Dubai Municipality Technical Guideline for Toy Safety	DM-PH&SD-P7-TG03
7	Federal Aviation Administration	FAA
8	Federal Laser Product Performance Standard	FLPPS
9	Food & Drug Administration	FDA
10	International Civil Aviation Organization	ICAO
11	International Electrotechnical Commission	IEC
12	National Hazard Zone	NHZ
13	Occupational Safety and Hazard	OSHA Technical Manual
14	Title 21 Code of Federal Regulations (CFR) Part 1040	CFR Part 1040
15	Center for Devices and Radiological Health	CDRH