MINISTRY OF HEALTH
AND SOCIAL SERVICES

NATIONAL RADIATION PROTECTION AUTHORITY

Guideline and Requirements for Radiation Safety in Dental Radiology

1. Introduction

The purpose of this information brochure is to provide an overview of the requirements, which are necessary to ensure safety and to protect workers, patients and the public from the harmful effects of radiation during the administration of x-radiation for diagnostic purposes in dental radiology. It further provides some basic guidance to licensees on how to comply with the requirements.

2. Legislative Requirements

a) No person may without a license possess, operate or use any radiation source (such as dental x-ray unit) or instruct or permit any person in his or her employ or acting in any manner on his or her behalf or promoting his or her interests to operate or use any radiation source

b) No person may use or operate any radiation source such as such as
i) the x-ray machine/unit,
ii) the facility,
iii) dental x-ray unit), unless the source as well as the facilities in which such source is being operated, are registered.


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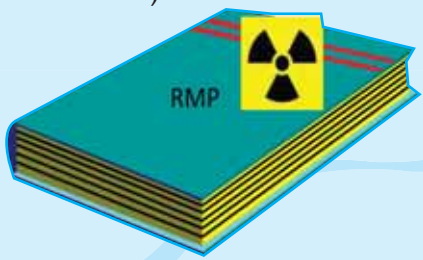
3. Requirements prior to granting a licence

a) Prior to consideration for a license an applicant must submit an application form and a Radiation Management Plan in the prescribed format.
b) The Radiation Management Plan must be a concise document that put forward the commitment and outlines the intents and ability of the applicant to operate in a manner designed to protect the health and safety of workers, patients and other members of the public who would be affected by the operations of the applicant. (Guidance provided below)



4. Requirements prior to granting a registration

Prior to registration of the premises and dental x-ray unit(s) the applicant must submit the prescribed application form and technical details of the radiation source (equipment) and facility (premises), including architectural drawing. (Guidance provided below)

5. Licensee

The administrative entity or persons who are designated as the holder of a licence (usually

the dentist or owner of the practices) under the Atomic Energy and Radiation Protection Act have the overall responsibility for the management and safe use of all dental x-ray equipments and must ensure compliance with legal and regulatory requirements. Thus responsibility for protection of workers, public and patients as well as the optimal functioning of equipment rest with the licensee.

6. Radiation Safety Officer

The qualifications of the Radiation Safety Officer must include a level of academic knowledge and of professional experience compatible with the levels of risks associated with the licensed practices or sources within a practice. The RSO may be dentists or other related health professionals who are qualified and recognized by the Authority to advise the licensee.

7. Technical Expert

The applicant must demonstrate that the person who operates the x-ray unit is admitted to practice a speciality (i.e dentistry) or other profession that involves the use of the x-ray unit for which he or she applies to be licensed and that he or she is sufficiently trained to operate

the x-ray unit in the correct manner.

8. Physical Structure Layout

a) Intra-oral equipment may be located in the dental surgery or a separate room. The exposure switch cable must be long enough to allow the operator and staff to maintain safe a distance of at least 2 m from the tube head.
b) In the case of panoramic, cephalometric or cone beam equipment, the unit should be installed and operated from behind a protection screen or wall in a separate room with a minimum dimension of 2m x 2m. The entrance door should be lead lined.
c) The walls of the x-ray room should have a minimum thickness constructed with 110 mm brick or equivalent density: 2.3 g/cm^3).

9. Guidance for Protection of Staff

a) The minimum structural layout requirements above should provide a means of protecting workers against recurrent radiation exposure
b) The licensee must ensure that the annual exposure of workers is quantified and documented. Advice may be obtained from the Authority.

c) Local rules must be developed and adhered to for the purpose of optimising protection of workers against radiation exposure (i.e do not stand in the direct beam during exposure, etc)

10. Guidance for Protection of the Public

d) The licensee must ensure that a record is kept of the average rate of radiation exposure at sites in and around the facility that are likely to be occupied by the public. (advice obtainable from the Authority)
e) The direct beam should be restricted to locations with adequate thickness of absorbing materials, i.e. brick or concrete, in order to protect persons working or living adjacent to the location locations.
f) In any location outside the room the dose rate must not exceeded 0.3μSv/h
g) When a controlled area extends to any entrance of the x-ray room, a warning notice must be provided on the outside of the door. This notice must include the basic ionizing radiation symbol.

11. Minimization of Doses to Patients

a) Only trained and qualified dentists, oral

hygienists or related health professions who are qualified and recognised by the Authority are allowed to perform x-ray investigations. Under no circumstances may any other staff member take x-rays (e.g. receptionist, practise manager)

b) No patient should be x-rayed unless the exposure is prescribed by a dentist.
c) Radiological examinations must be based solely on clinical indications, taking into account the associated risk and alternative techniques if appropriate.
d) Exposure of patients must be limited to achieve only the required diagnostic objective, taking into account norms of acceptable image quality.
e) Radiological examinations causing exposure of the abdomen or pelvis of women who are pregnant or likely to be pregnant should be considered carefully and then only with a lead apron. No x-rays should be taken in the first trimester (week 1-12 of pregnancy).
f) All X-ray equipment must be serviced and have its performance checked according to the manufactures recommendations. The performance parameters must be within predefined limits (i.e measured kV to be with 5% of stated kV setting).