

SUMMARY OF SUBMISSIONS AND RESPONSES
DRAFT CODE OF PRACTICE FOR SAFE USE OF RADIATION IN DENTISTRY

SUBMITTER	COMMENT	RESPONSE
<p>01 David Churcher</p>	<p>I would like to see the code clarify who is allowed to “push the button” and under what circumstances.</p> <p>Assistants are taught in their course that only a dentist or authorized person can “push the button”</p> <p>In discussion with the dept of human services we have been told it is acceptable for the authorized operator of the radiation equipment to stand beside an assistant and when satisfied all is ready to expose the radiograph, give the “push the button” command.</p> <p>I have scanned the ? relevant sections of the code and cannot find a specific reference to who can [and under what controls] activate dental x-ray equipment.</p> <p>This is important in view of the infection control requirements and the need to return to the patient and retrieve a film promptly when positioned in oral areas that can initiate gagging etc</p>	<p>This issue is dealt with in 2.4.1 & 2.4.2. It is not considered appropriate to be more specific as the issue is dealt with by Dental Practice Boards.</p> <p>In relation to infection control, this is best handled by using a disposable plastic covering over the exposure control.</p>
<p>02 Prof Paul V Abbott - University of WA, Faculty of Medicine & Dentistry</p>	<p>Thank you for your letter of 29th July 2005 in which you have called for submissions regarding the Draft Code of Practice and Safety Guide for Radiation Protection in Dentistry. I appreciate being given the opportunity to submit the following comments which I hope will be helpful to the Committee when they are finalising the various documents:</p> <p><i>1. Regulatory Impact Statement – Public Consultation Draft</i></p> <ul style="list-style-type: none"> • Sections 3 and 4 on page 3 of this document use the terminology “orthopantomograph” and the abbreviation “OPG”. This term and abbreviation should not be used to describe the type of extra-oral radiograph that is being referred to in this document as “orthopantomograph” is a BRAND name for a particular type of machine that is used to take PANORAMIC radiographs of the jaws. Likewise, “OPG” refers to the brand name “orthopantomograph” and hence it should not be used to describe a panoramic radiograph that can be taken by many different brands of x-ray machines that are specifically designed and built for this type of radiograph. 	<p>Noted.</p> <p>While these terms are in common usage in dental practice, the RIS will be amended to use panoramic radiography.</p>

	<p>“<i>Orthopantomograph</i>” and “<i>OPG</i>” are terms that are commonly used within the dental profession but this should not mean that they are correct or appropriate. The Regulatory Impact Statement and the Code of Practice and Safety Guide should/must contain the correct terminology and could even go a step further by mentioning in these documents that correct terminology should be used by dentists at all times. In this case, the correct term or name for the type of radiograph being discussed is a “<i>Panoramic Radiograph</i>”.</p> <p>2. Code of Practice and Safety Guide</p> <ul style="list-style-type: none"> • <i>General comment</i> - This document consists of 66 pages with two major sections. This structure is rather confusing and leads to the document having considerable repetition between the two sections. Such repetition detracts from the usefulness of the document and is a disincentive to practitioners and their staff to read it all. • <i>Page 36</i> – The discussion of the Choice of Film would be enhanced by providing guidelines for how the various films should be orientated in a patient’s mouth for the various types of radiographs being taken. For example, a periapical radiograph in an adult should be taken with the film oriented vertically for anterior teeth and horizontally for posterior teeth. Such statements would help dentists, students and dental auxiliaries to take better radiographs. As a clinical teacher and as a Specialist Endodontist, I regularly see films that have been incorrectly oriented by students and dentists. Hence, this document could be used to help educate the profession regarding this issue. • <i>Page 38, lines 749-752</i> – there is no published research or other evidence that I am aware of that has proven that rapid processing of radiographs produce s an inferior image, a “grainy” image, one lacking contrast, or one lacking diagnostic information. As an Endodontist, I have been using rapid processing techniques for all of my radiographs for over 22 years and I have never noticed any of these problems. I am aware of some of my colleagues who have used rapid techniques for over 40 years with no such problems. The comments made in the Draft appear to be a “myth” that has been propagated through the profession for many years but without any scientific basis. I believe this statement 	<p>The Code should use the correct terminology, but not tell dentists that they must use correct terminology at all times.</p> <p>The separation of Code from Safety Guide is deliberate and necessary to assist use of the Code as a regulatory document.</p> <p>This suggestion is more appropriate for a text book, rather than a Code or Safety Guide.</p> <p>The wording has been amended to indicate that rapid processing “may” lead to grainier radiographs.</p>
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	<p>should be altered so that a correct impression is given – that is, that rapid processing is acceptable provided the manufacturer’s guidelines are followed and provided the radiograph is thoroughly washed in running water after being “fixed”.</p> <ul style="list-style-type: none"> • <i>Page 38, lines 780-784</i> – Is there any evidence that storage of radiographic films in a refrigerator is of any benefit. I have been advised by Kodak sales staff to simply store their intra-oral films in a normal cupboard as the moisture within a refrigerator can cause condensation in the film packet and reduce their shelf life. Perhaps the Committee should investigate this aspect to determine what is “<i>best practice</i>”. • <i>Page 39</i> – it is suggested that the Developer and Fixer solutions should be replaced every 2 weeks. I believe this is far too long a time period to keep these solutions and this can lead to poor quality films. I suggest that this time period be reduced to a maximum of one week, but preferably less than this, in an effort to improve the processing of radiographs and the diagnostic quality of the films produced by dentists. • <i>Page 40, line 842</i> – it is NOT necessary to carry out step 6 of the processing under safe-light conditions. Once a radiographic film has been placed into the Fixer solution, there is no further need for “safe-lights”. Hence, this statement should be corrected to read “<i>Steps 1-5 must be ...</i>” • <i>Page 49, line 1044</i> - Intra-oral radiographs can be duplicated in exactly the same manner as extra-oral films so there is no need to specify that “extra-oral radiographs can very easily be copied”. This statement should read that ALL radiographs can be easily duplicated to produce a copy of the film. <p>I also note that radiographs can be easily scanned to produce electronic images with computer equipment. Perhaps the document should mention this and make comments about how to preserve the true image in a secure way and not allow any alterations to be made via software programs.</p> <ul style="list-style-type: none"> • <i>Page 51, lines 1111-1116</i> - Mention has been made of E-speed films but not of F-speed film which has been available for at least 4-5 years 	<p>The Code does not explicitly recommend fridge storage, it provides advice on what should be done if film is stored in a fridge.</p> <p>The QA section has been amended to respond to a range of comments.</p> <p>The present wording is preferred to ensure that films are not exposed to light too early in the cycle.</p> <p>Agreed and amended.</p> <p>Scanned images would be unlikely to retain the quality of the original.</p> <p>Agreed and amended.</p>
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	<p>and is a faster speed film than E-speed. Practitioners who use F-speed film have generally been happy with the quality of the image produced with this film. Hence, F-speed film should be mentioned in the document.</p> <ul style="list-style-type: none"> • <i>Page 54, lines 1215-1222</i> - This paragraph has not mentioned that a darkened room should be used for viewing radiographs or alternatively a device that blocks out peripheral light from the observer's field of vision and from around the radiograph during viewing. Devices such as the Trollplast viewer are ideal for the examination of both intra-oral and extra-oral radiographs and their use should be encouraged at all times. Other companies also make similar devices. These devices not only block out all peripheral light, but they magnify the image as well. I strongly advise that these devices should be described and recommended in this document, and this is consistent with the teaching at this School of Dentistry. <p>I hope the above comments are helpful and sufficient for your Committee. Please do not hesitate to contact me if you require any further information or assistance with this matter.</p>	<p>It is considered that the existing wording adequately covers this point. It is not appropriate to use the name of one product, when there may be other options.</p>
<p>03 Richard Smart PhD Chief Physicist and Radiation Safety Officer Conjoint Assoc Prof, University of NSW Prof Fellow, University of Wollongong Department of Nuclear Medicine St George Hospital Kogarah,</p>	<p>Please find attached my comments on the draft Dentistry Code and Safety Guide.</p> <p>I have also provided these comments to the ACPSEM and to NSW DEC, so you may get some of the points again.</p> <p>One point that I would like to highlight is point 9 in my submission : Section 2.3.3(b) (line 212) requires the Responsible Person to obtain a copy of the dose record associated with any previous employment in which ionizing radiations were used. There is no similar requirement in RPS5 (Portable Density/Moisture Gauges Code) or the recently approved RPS9 (Mining Code).</p> <p>I have just looked in the draft Vet Code and found that this requirement is in that Code as well. I know that it is currently not in the draft Nuclear Medicine Code. I believe that this is an important issue that may require a decision by the RHC. If the RHC decides that dose records must be obtained for previous employment then this must be standard across ALL Codes.</p> <p>In NSW the Regulation requires the employer to issue an employee with 2</p>	<p>This should be a reference to line 156 rather than 212. This clause will be deleted or made consistent with RPS1.</p> <p>RHC will be asked to confirm wording of final draft and note that it is an issue for the whole RPS series.</p>

	<p>copies of their dose record on termination of employment. Although I issue these here, I have NEVER been handed a copy of a dose record by a new employee. There is NO requirement for the employer to obtain a copy of the dose record from previous employment in the NSW Regs. I'm not certain what the other States require.</p> <p>I am aware that it is standard practice in the UK and USA for the Regulation to require the employer to obtain copies of previous dose records. I periodically get letters from overseas universities and hospitals requesting such records.</p> <p>Personally, I would much rather see the National Dose Registry resurrected so that a complete dose history is kept centrally, rather than put this extra burden on the RSO.</p> <p>Comments on the draft Code of Practice for Radiation Protection in Dentistry</p> <ol style="list-style-type: none"> 1. In all instances the 'responsible person' should be written with initial capitals (ie Responsible Person). In many places initial capitals are used, but in others, eg line 30, lower case is used. 2. Suggest that Section 2 be restructured with the following subheadings: <ol style="list-style-type: none"> a. Responsibilities of the Responsible Person b. Responsibilities of the Radiation Safety Officer c. Responsibilities of the Clinician operating the Dental X-ray Equipment d. Responsibilities of the Referrer e. Responsibilities of the Persons supplying, installing and servicing dental x-ray equipment <p>Lines 73 – 101 would then come under the RSO section.</p> 3. Section 2.3.1 relates to the responsibilities of the Responsible Person and should be under section 2.2 and not as a separate section. 4. Sections 2.3.2 – 2.3.4 should be moved to section 6.8 5. Section 2.6 is the responsibility of the Responsible Person and should be under section 2.2 and not as a separate section. 	<p>Noted</p> <p>Noted</p> <p>Noted, but is outside the scope of the working group's task.</p> <p>Agreed</p> <p>Most of these suggestions are agreed. It is not intended to have a separate section for RSO, as in dentistry in many cases the Responsible Person and the RSO are the same person and it is ultimately the Responsible Person who must ensure that these duties are done.</p> <p>Agreed.</p> <p>These sections have been amended. It is not proposed to have a separate section on personal monitoring as dentists are often exempt from monitoring.</p> <p>Agreed</p>
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	<p>6. Section 2.5 should be rewritten so that it starts “The referrer must” So that it is consistent with the other sections.</p> <p>7. Section 2.2.11 (line 144) refers to “the relevant dose constraints”. Dose constraints are not defined in the Glossary. This phrase is pointless without further explanation.</p> <p>8. Suggest that Personal Monitoring become a separate section, rather than a subsection of Responsibilities.</p> <p>9. Section 2.3.3(b) (line 156) requires the Responsible Person to obtain a copy of the dose record associated with any previous employment in which ionizing radiations were used. There is no similar requirement in RPS5 (Portable Density/Moisture Gauges Code) or the recently approved RPS9 (Mining Code). It is important that all the RPS Codes are consistent. As it currently stands it would be a breach of the Dental Code if these previous records were not available even if the RSO had requested them. I recommend that this becomes a “should” clause rather than a “must”.</p> <p>10. Line 178. Change “2.2.1” to “2.4.1”</p> <p>11. Section 3.2.2 must be reworded to refer to RPS8 and the clause “and approval for a project must be obtained from the regulatory authority, where necessary” deleted.</p> <p>12. Section 3.2.3, line 249 – again “dose constraints” are referred to without definition.</p> <p>13. Section 6.2.1(b)(ii) (line 401) and 6.7.1(d) (line 345)– suggest adding after “protective apron” “with a shielding value of not less than 0.3 mm lead equivalent at 150 kVp” (This is a requirement in NSW, specified in Radiation Guideline 6, part 3).</p> <p>14. Lines 482 – replace E_T with E</p> <p>15. Lines 490 – replace H_T with H</p> <p>16. Definitions of Effective Dose and Equivalent Dose should be identical with those given in Annex B of RPS1</p>	<p>Agreed</p> <p>A definition will be included.</p> <p>It is not proposed to have a separate section on personal monitoring as dentists are often exempt from monitoring.</p> <p>To be deleted or made consistent with RPS1. RHC to review final text as an issue for all Codes.</p> <p>Agreed</p> <p>Agreed</p> <p>Definition to be included.</p> <p>Will be made consistent with the Australian Standard rather than NSW.</p> <p>Deleted bracketed item</p> <p>Deleted bracketed item</p> <p>Agreed</p>
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	<p>17. Line 500 – C/kg should be in brackets.</p> <p>18. Delete lines 552-554. It is not necessary to define Sievert as both equivalent dose and effective dose are defined, including the unit.</p> <p>Comments on the draft Safety Guide for Radiation Protection in Dentistry</p> <p>1. For compatibility with other RPS publications, insert a new section 1.1 Citation with the following text: This Safety Guide may be cited as the <i>Safety Guide for Radiation Protection in Dentistry (200x)</i>.</p> <p>2. Replace lines 955-957 with “The Safety Guide provides additional explanatory material on certain aspects of the Code of Practice for Radiation Protection in Dentistry.”</p> <p>3. Section 3.3 should be rewritten in light of the publication of RPS8.</p> <p>4. Line 1113 – change “have demonstrated” to “have been demonstrated”</p> <p>5. Line 1116 – change “D speed” to “D-speed” and “E speed” to “E-speed” to be consistent with the rest of the paragraph.</p> <p>6. The formatting of section 6 does not follow the conventions used in the rest of the document. For example, subheadings are given in italics with the subject matter starting on the same line.</p> <p>7. Table 2, page 62. The quoted effective dose for a chest x-ray is for a PA view only. The dose is substantially higher if a lateral view is performed as well. Suggest changing the wording under Examination to “Skull radiograph” and “PA Chest radiograph”.</p>	<p>Agreed</p> <p>While not strictly necessary, the working group preferred to keep the definition.</p> <p>Agreed</p> <p>Agreed</p> <p>Agreed</p> <p>Agreed</p> <p>Agreed</p> <p>Noted – formatting to be reviewed</p> <p>Agreed</p>
<p>04 Johannes Keur</p>	<p>I have the following comments regarding the draft Code of Practice and Safety Guide “Radiation Protection in Dentistry 2005”</p> <p>Protective drapes</p>	

	<p>Some time ago you sent me a copy of an article by Hujoel et al in the Journal of the American Medical Association (April 28, 2004; 291:1987-1993) entitled: Antepartum Dental Radiography and Infant Low Birth Weight.</p> <p>After having read this I think we ought to re-visit our opinion regarding the provision of protective drapes, and in particular that of the thyroid collar. In this article, which is generally considered to be well designed, the authors conclude:</p> <p>“In summary, this study provides evidence that very low-dose radiation to the maternal head-and-neck region during pregnancy is associated with LBW offspring.”, and:</p> <p>“The notion that very low-dose radiation exposures to nonreproductive organs in expectant mothers are safe needs to be investigated further.”</p> <p>The American Dental Association and the US Department of Health and Human Services are taking this study seriously when they make the following recommendation in their joint publication: The selection of patients for dental radiographic examinations. (Revised 2004)</p> <p>“The amount of scattered radiation striking the patient’s abdomen during a properly conducted radiographic examination is negligible. However, there is some evidence that radiation exposure to the thyroid during pregnancy is associated with low birth weight. Protective thyroid collars substantially reduce radiation exposure to the thyroid during dental radiographic procedures. Because every precaution should be taken to minimize radiation exposure, protective thyroid collars and aprons should be used whenever possible. This practice is strongly recommended for children, women of childbearing age and pregnant women.”</p> <p>In view of this I propose that a recommendation be made in the Guide to routinely provide children and women of reproductive age with a thyroid collar during any form of intra-oral radiography and additionally with a lead apron when the X-ray beam is directed at the abdomen.</p> <p>Code Clause 3.1.2 I suggest the following re-wording:</p> <p style="text-align: center;">Radiology must not be used as a substitute for a clinical investigation, and</p>	<p>After discussion, it was considered that an increase in retakes caused by thyroid collars may also be a factor. On balance it was not thought necessary to change on the basis of one paper.</p>
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	<p>therefore radiography must not be undertaken until a medical history has been taken and a preliminary clinical examination has been performed <u>established the necessity for a radiological examination</u>.</p> <p>Code Clause 4.1.2 I suggest the following re-wording: Dental X-ray equipment which is in use at the time of introduction of this code, and which does not comply with the relevant requirements of AS/NZS 3200.2.201 <u>or its successor</u>, must be modified to comply with the requirements, except where otherwise approved by the regulatory authority, or phased out of use on a time scale approved by the regulatory authority. Note that it may not be practical to modify some old equipment.</p> <p>Code Clause 5.2.1 I suggest the following re-wording: Films must not that have passed the manufacturer's recommended expiry date <u>must not be used</u>.</p> <p>Code Clause 6.2 This clause is a problem for multi-chair situations such as School Dental Service vans as it requires other patients and staff attending to these patients to leave the room during an exposure. I therefore suggest the following re-wording of that clause:</p> <p>6.2 PERSONS IN THE ROOM DURING RADIOGRAPHY</p> <p>6.2.1 No person must be present in the room during a radiographic examination unless they are either: (i) behind a shield or (ii) at least 2 metres from the X-ray tube and not in line with the primary beam.</p> <p>6.2.2 If a person needs to be in the room during a radiographic examination because his/her presence is necessary for the conduct of the examination this person must be either: (i) behind a shield; (ii) wearing a protective apron, or (iii) at least 2 metres from the X-ray tube and not in line with the primary beam.</p>	<p>Agreed</p> <p>Not agreed as it creates difficulties for regulators to use.</p> <p>Agreed</p> <p>The wording proposed below for 6.2.1 and 6.2.2 is contradictory and not agreed.</p>
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	<p>6.2.3 Employees who have no direct involvement in work that requires exposure to radiation must have their exposure controlled such that their doses do not exceed the limit for members of the public.</p>	
<p>05 Garry Pearson Chief Executive Officer Australian Dental Association Victorian Branch Inc</p>	<p>The Australian Dental Association Victorian Branch Inc. (ADAVB) is pleased to respond to the Consultation Draft of the Code of Practice and Safety Guide on Radiation Protection in Dentistry (2005).</p> <p>The ADAVB represents over 90% of private practitioner dentists and about 60% of public sector dentists in Victoria. It is the peak body for the dental profession in this State with most other dental organisations and societies recognised as affiliates. We have therefore appreciated the opportunity for our representatives to contribute to the development and refinement of the Consultation Draft.</p> <p>In order to assess the views of a wider cross section of members, comments were invited from the membership, and this submission now incorporates their feedback.</p> <p>Branch representatives would be happy to amplify the remarks offered herein if this would be of assistance to ARPANSA.</p> <p>Preamble</p> <p>The draft code is, overall, a very suitable document. However, there are some items where some clarification or alteration may make it more workable for the average dental practice.</p> <p>We recognise that the proposed Code is in two parts. The Code of Practice contains only the mandatory requirements (the “must” items). The Safety Guide contains recommendations which are such that if practitioners do not comply with the recommendations they would need to have a convincingly arguable reason for not doing so.</p> <p>Some of the features of the code are briefly noted below and followed by a discussion of areas of concern, from the point of view of a practitioner who must use the Code and Safety Guide as a reference document.</p> <ul style="list-style-type: none"> • The “Responsible Person”, who has overall responsibility for 	<p>Noted</p> <p>Noted</p> <p>Noted</p> <p>The summary of the Code is noted.</p>

	<p>implementing the Code, need not be a dentist. In corporate or community practices this responsibility may belong to a senior person who has knowledge and control in the organisation, department or practice. This could free some dentists from the administrative, record keeping and training of staff duties in respect of radiography. The Responsible Person will appoint a “Radiation Safety Officer” (RSO) who will have sufficient knowledge and training and seniority to carry out RSO duties, which remain very similar to those which applied prior to 2005.</p> <ul style="list-style-type: none"> • Personal monitoring of all staff involved in radiography is to be continued, and records of dosages received during present and past employment must be kept. This remains a most welcome OHS measure. • The proposed maintenance of radiographic records generally aligns with the medico-legal advice on general dental records.(7 years for adults, and until a child is 18 plus 7 years) • The draft specifies that radiographs must not be taken prior to the taking of a medical history and preliminary examination. Whilst academically correct, this could be unnecessarily restrictive in some emergency situations. • Equipment compliance with AS/NZS 3200.2.201.2000 will present an issue for those owning the estimated 5% (or more) of machines which do not comply e.g. 55 KV machines. • The code envisages that a mandatory quality assurance system must be set up to allow the rate of depletion of developing solutions to be monitored continually. • While the draft does not specify the routine use of lead aprons and thyroid collars there is mention in the Safety Guide of the need for such protection for pregnant women, and children, particularly where the primary beam may be directed toward thyroid or gonads. • The draft envisages increasing the use of digital radiography and suitable sections of the code and safety guide have been included. <p>We suggest that it will be important for the Code and Safety Guide to specify the basic or minimum requirements. They should not impose restrictions on the use of new methods. It is important to allow for the development of new methods as these are what make the world improve. A number of clinical guidelines used in medicine do not allow this freedom of use of new techniques and place the clinician in a position of being subject to prosecution even though the technique offers improved outcomes.</p>	<p>Noted</p>
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	<p>Areas of possible concern for dentists</p> <p><i>2.2.10 The Responsible Person, in consultation with the regulatory authority, must ensure that appropriate radiation safety assessments are made by an appropriately qualified person for the following circumstances:</i></p> <p>...</p> <p><i>(d) where changes are to be made in the immediate environs that may result in an increase of occupancy;</i></p> <p><i>(e) where an increase in workload in the department or practice is anticipated; or</i></p> <p>With regard to 2.2.10 (d) the changes to occupancy levels is a regulatory requirement in local government property development regulations, and appears to be an unnecessary imposition on dental practices. The increase in workload mentioned in 2.2.10 (e) would seem to relate to large hospital organizations rather than the average dental practice. We therefore suggest that it should not appear in the general dental guidelines but rather those related to public institutions.</p> <p>2.3.3 “Radiation dose records must show:</p> <p><i>(a) doses assessed during the present period of employment; and</i></p> <p><i>(b) doses assessed as a result of any previous employment in which ionizing radiations were used.”</i></p> <p>We are not aware of any requirement on an employer to pass “dosage received” by an employee to a subsequent employer. If (b) relates only to any previous period of employment with the same employer it should say so. It would be helpful to make this an employee obligation to disclose the dosage received to their new employer. The situation needs to be clarified as privacy issues are involved. Perhaps consideration could be given the radiation monitoring service maintaining a central record of radiation exposure in a similar manner to employees have portable superannuation.</p> <p>2.5 “REFERRALS FOR RADIOGRAPHIC EXAMINATION In cases where patients are referred for radiographic examination, clinical notes must be provided. These notes must contain both the reason for the radiological examination as well as an adequate history. If any radiographs were taken in relation to the condition prior to the referral, these or the reports must also be included where relevant.”</p>	<p>The clause summarises standard radiation protection practice and should remain.</p> <p>This clause will be deleted or amended to be consistent with RPS1 after RHC review.</p>
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	<p>This potentially places a significant imposition on the dentist that may not be able to be complied with due to the unknown exposure of a patient at other practices and even with other clinicians within a group practice. We agree however that if a referral to a radiologist is made, then it should be accompanied by a referral letter indicating the patient details, the nature of the film and any special instructions (such as the use of radiographic guides).</p> <p>Dentists referring patients for radiographs, whether OPG, cephalometric or tomography in relation to implants, often comment that the reports, if any, provided with the films are significantly less helpful than the films. This is often because the dentist is highly skilled and experienced in interpretation in his/her own field. In this circumstance it seems “administrative overkill” to mandatorily require previous films or reports to be sent with the referral. The insertion of Item 2.5 was apparently prompted by the failure of some practitioners to adequately inform radiologists of the precise films required. Our recommendation would be to rephrase the last sentence in 2.5 as below.</p> <p><i>“If any radiographs were taken in relation to the condition prior to the referral, these or the reports must also be included where they are both relevant and helpful in patient care.”</i></p> <p>3.1.2 “Radiology must not be used as a substitute for a clinical investigation, and therefore radiography must not be undertaken until a medical history has been taken and a preliminary clinical examination has been performed.”</p> <p>It would be rare in general dental practice to encounter a case where a medical history and preliminary examination could not be obtained prior to taking a radiograph, but we suggest that to expedite emergency treatment, Oral & Maxillofacial surgeons may sometimes order films urgently where trauma and altered states of consciousness are involved.</p> <p>It is therefore suggested that 3.1.2 should read,</p> <p><i>“Radiology must not be used as a substitute for a clinical investigation, and therefore radiography must not be undertaken until a medical history has been taken and a preliminary clinical examination has been performed, unless an emergency situation dictates otherwise, or duplicated consultations should be avoided e.g. requiring an OPG</i></p>	<p>Radiological has been changed to radiographic.</p> <p>The existing wording seems to already cover this point.</p> <p>Have amended the clause in response to this comment.</p>
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where a patient has problems with an erupting wisdom tooth.”

4.1.2 “Dental X-ray equipment which is in use at the time of introduction of this code, and which does not comply with the relevant requirements of AS/NZS 3200.2.201, must be modified to comply with the requirements, except where otherwise approved by the regulatory authority, or phased out of use on a time scale approved by the regulatory authority. Note that it may not be practical to modify some old equipment.”

ARPANSA has estimated that 5% of X-ray machines used to expose intraoral films will not comply with AS/NZS 3200.2.201. Such an estimate may be conservative as is the estimate of \$7000 to replace a noncomplying machine. A significant number of dentists will need to modify or replace X-ray machines, although the ADAVB is not in a position to accurately determine the actual number. Information was requested from the DHS Radiation Safety Program Unit, on the number of machines that they estimate would be non-complying in Victoria, or alternatively the number of machines operating at less than 60KV. A reply received by email is attached to the end of these comments (see Attachment 2 on page 10).

Briefly, the Radiation Safety Program Unit indicates that approximately 10% of present dental intra-oral x-ray machines in Victoria operate at less than 60 KV, and would be non-compliant on that ground alone. The issues of reproducibility, linearity, timers, and KV accuracy may also render higher KV machines non-compliant, but the data on these issues seems not to be available.

It is estimated that up to 10% of Victorian intra-oral X-ray machines will need replacement or modification to comply with the proposed code. In the interests of not imposing significant costs on both public and private dentistry over a very short time span, **effort should be directed at ensuring that a generous phase-in time is agreed with the relevant authority.** This would also prevent a bottleneck in the provision of service personnel at the time of introduction of the new code.

4.1.4 “Equipment designed for intra-oral radiography must not be used for any other type of radiographic examination. Radiography of the mandible, including temporo-mandibular joints, must be conducted only on general purpose medical X-ray equipment or on special purpose equipment designed for such examinations and authorized as required by the regulatory

The Victorian letter is noted, however it should also be noted that the 60kV provision has been in Australian Standards since approx 1977, hence there has been adequate time for changeover. The Code also provides that the regulator can set an appropriate phase in period to minimise cost issues.

The 5% figure is an Australia-wide estimate.

The Code provides that the regulator can establish the phase-in time.

Clause amended to take account of this issue.

	<p><i>authority.”</i></p> <p>This section will prevent dentists taking lateral mandible films, using an intensifying screen cassette, with their usual machine. While this may have been largely superceded by the use of OPG machines, some dentists will be forced to refer these cases to a radiology practice, buy an orthopantomographic machine or cease using lateral mandibular views. As an OPG film potentially contains more information this may be desirable but is likely to be a source of complaint from some members.</p> <p><i>4.1.5 “Hand and wrist radiography (which may be required for bone age determination) must only be performed on medical X-ray equipment or on special purpose equipment designed for such examinations, and operated by appropriately trained and licensed persons.”</i></p> <p>We understand that most orthodontists rarely use “bone age determination” films. In general those requiring such films refer to a radiologist.</p> <p><i>5.6.2 “An appropriate quality assurance program on film processing must be implemented to ensure that radiographs are of adequate diagnostic quality.”</i></p> <p>This item has the potential to be the main source of contention as it will require extra staff time, materials (film) and extra documentation. The estimate in the impact statement of 12 hours/annum at \$25 p/h (15 mins/week) seems optimistic. The impact statement also asserts that 50% of practices take digital images and would not therefore be processing film. This may or may not be correct.</p> <p>Item 5.1 in the Safety Guide describes a method of exposing a batch of test films, greater in number than the number of days the developer solution is expected to last. This will require the purchase of a “step wedge” to expose test films (approx \$100). Another method is possible without using a “step wedge” but it will be expensive in terms of dentist’s time as four times as many exposures would be required (e.g. Instead of 15-20 exposures about 60 – 80 may be required).</p> <p>As only licensed personnel can operate the x-ray unit in Victoria, the test exposures could only be taken by dentists, or other licensed persons. These test films are to be made with a standardized technique prior to a new batch of</p>	<p>The working group believes that this clause is still required.</p> <p>The QA section has been modified to provide simpler options.</p> <p>These two paragraphs summarise the QA program in the Safety Guide and are noted.</p>
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	<p>developing solutions being prepared, at which time one master film will be developed. Each day one of the batch of exposed test films will be developed before any patient films are processed, and compared to the master film. By this method any deterioration in the film optical quality will be noted, and the old solutions discarded. The QA process of test films, and newly mixed solutions will be restarted.</p> <p>It is suggested that while a QA control of rate of deterioration of developing solutions is desirable the described method is wasteful of time and resources. It should be possible to devise a system in which a baseline rate of replacement for developing solutions is discovered for each practice by means of the method described, but then spot checks could be used when approaching the expected “use by” date. The complete QA process as described in the Draft could be repeated at six monthly or longer intervals as long as the results did not show any divergent rates of deterioration in the quality of films. This would be a process similar to the commissioning and retesting at specified intervals of dental bench top autoclaves.</p> <p>We understand the reason that ongoing daily test films are suggested in the Safety Guide is a concern that contamination of the developer can result in fogging of film well before the developer would normally be depleted. We suggest that this is essentially a training issue, and that rather than being addressed by daily ongoing testing, refresher training should be undertaken where any problem with fogging is found. This will usually focus on instruction in film alignment and positioning to ensure that films taken are of “diagnostic quality”. The provision for practices with low X-ray usage to reduce the frequency of testing once the working life of the developer has been established, to once every two to three days is acknowledged.-</p> <p>We would also suggest that a simple logbook be kept to record the process as the DPBV, who will no doubt adopt the Code, seems to work on the principle that if it isn’t recorded it hasn’t been done. Elaborate records seem to be unnecessary, as the films themselves are a record of their quality.</p> <p>Most dental practices are very small, and film development is done by hand so that even the slightest deterioration in image quality would be immediately evident. This means that formal quality assurance protocols are not indicated in the way they might be for a large public institution.</p>	<p>A modified QA program has been put forward.</p> <p>Daily films were not proposed after establishing the baseline, however a modified system is included in the revised Code.</p> <p>Noted</p> <p>Noted</p>
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6.3 EXPOSURE TO THE PRIMARY X-RAY BEAM

Under no circumstances must the operator or any member of the dentist's staff be exposed to the primary beam during a radiographic exposure or during testing of the equipment.

6.4 HOLDING OF IMAGE RECEPTOR AND STANDARDISATION OF TECHNIQUE BY USING IMAGE RECEPTOR HOLDERS

The image receptor must not be held in position by the operator or any member of the dentist's staff either by hand or with forceps.

6.5 HOLDING OF X-RAY UNIT

No person must hold any part of the X-ray tube head during a radiographic exposure.

6.6 HOLDING OF PATIENTS

Neither the operator nor and any member of the dentist's staff must hold patients during radiographic examinations. If parents or other persons are called to assist, they must be provided with protective aprons and be positioned so as to avoid being exposed to the primary X-ray beam. One person must not regularly perform these duties.

6.7 POSITION OF OPERATOR DURING EXPOSURE

6.7.1 With respect to the use of distance as a means of reducing radiation dose, the operator must stand outside the primary beam and either:

- (a) at least 2 metres away from both the X-ray tube head and the patient;*
- (b) behind structural shielding of an adequate area and thickness;*
- (c) behind a protective screen; or*
- (d) wearing a protective apron.*

6.7.2 Where a protective screen is provided, the exposure control must be arranged so that it can only be operated from within the protected area.

6.7.3 The operator must be able to observe the patient during dental

Discussed at Attachment 1.

	<p><i>radiographic procedures.</i></p> <p>Please refer to Attachment 1 (page 9), in which the Paediatric Dental Study Club argues for exceptional circumstances, particularly involving treatment of children, to be taken into account in allowing some flexibility in application of the procedures to minimise exposure to ionizing radiation.</p> <p>Conclusions & Recommendations</p> <p>The draft Code of Practice and Safety Guide is generally a suitable revision of the previous 1987 Code but it is felt that new code will impact significantly on dentists in the following areas.</p> <ol style="list-style-type: none"> 1. Up to 10% the intra-oral X-ray machines in use in Victoria will need to be replaced or modified. The agreement by authorities to an extended phase-in time would avoid the imposition of sudden unexpected and significant costs to both public and private dentistry, and undue pressure on the technical services required to complete the upgrades. 2. While the Quality Assurance process designed to prevent the use of depleted developer and fixer, and thus improve film quality, is desirable, the developing of a test film each and every day that radiographs are developed would seem to be unnecessary. Once a satisfactory time limit of solution use is established, daily checking over the last 3-4 days of the cycle would be all that is required to fix the exact time for solution replacement. 3. Rephrase Item 3.1.2 so that in emergency and other situations, the taking of a radiograph prior to preliminary examination and obtaining a medical history would not constitute a breach of the code, and of the DPBV regulation after adoption of the code by DPBV. 4. Rephrase Item 2.5 as suggested in the comments on this item so that the sending of previously taken films with each referral is required <i>only when both relevant and helpful in patient care.</i> 5. Item 2.3.3 (b) may conflict with privacy legislation, or the information may not always be accessible to a new employer. Placing the onus on the employee to disclose their dosage exposure to their new employer would more usefully address privacy concerns here. The maintenance of a central database on dosage exposure by the monitoring agency might be a 	<p>Conclusions noted – responses are indicated above</p> <p>The revised wording covers the emergency situation.</p>
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	<p>preferable means of achieving the desired outcome.</p> <p>6. Make some allowance for exceptional circumstances with regard to the treatment of children, and perhaps special needs patients, in the interpretation and application of procedures to minimise exposure to ionizing radiation</p> <p>ATTACHMENT 1: Comments from the Paediatric Dental Study Club highlighting the need for recognition of exceptional circumstances</p> <p><i>Dear Mr Pearson,</i></p> <p><i>With regards to the Draft Code of Practice and Safety Guide for Radiation Protection in Dentistry, the Victorian Paediatric Dental Study Group would like to submit feedback on these draft guidelines.</i></p> <p><i>Our concerns lie with sections 6.3, 6.4, 6.5, 6.6 and 6.7 and the absence of variation of these guidelines under exceptional circumstance.</i></p> <p><i>6.3 – Exposure to the primary x-ray beam. It is necessary, on occasion, for the practitioner to support a small infant/child undergoing radiographic examination to ensure the beam is accurately positioned. This may occur due to the inability of the parent/guardian to accurately support the child and film, and would only occur in cases where radiographic information is vital. An example of this is in the case of a child of a pregnant mother who has traumatized/intruded their anterior deciduous teeth and a radiograph is required to determine whether the teeth are in situ or not.</i></p> <p><i>6.4 – Holding of image receptor and standardization of technique by use of image receptor holders. The same issue applies as for section 6.3; in the case of a pre-cooperative child who cannot stabilize the film themselves. The film can either be held by the parent/guardian, or the operator. An example of a clinical scenario is as above. The decision of the health cost/benefit regarding x-ray exposure to the individual holding the film is made depending on the clinical situation as outlined in section 3.1.</i></p> <p><i>6.5 – Holding of x-ray unit. In exceptional cases, it is necessary for the tube to be stabilized with the film when imaging a pre- or uncooperative child as illustrated above.</i></p>	<p>It should not be necessary to be exposed to the primary beam.</p> <p>It is not appropriate for the dentist or staff to hold films in position.</p> <p>No change to the code is proposed.</p> <p>Whilst it may be necessary it should not be by the dentist or staff.</p>
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6.6 – **Holding of patients.** *In exceptional cases, it is necessary for the patient to be stabilized with the x-ray tube and film when imaging a pre- or uncooperative child as illustrated above.*

6.7 – **Position of operator during exposure.** *As described previously, there are clinical scenarios in paediatric dental practice where it is necessary for the operator, under their judgment, to expose themselves to the x-ray primary beam. Suitable protective apparatus, such as lead aprons and thyroid shields would be employed for the patient, parent and operator where appropriate.*

I thank you for this opportunity to comment on these draft guidelines

*Yours sincerely
David Manton MDSc*

On behalf of Prof Louise Brearley Messer, A/Prof Roger Hall, A/Prof Nicky Kilpatrick and Drs Hanny Calache, Karen Kan, Barbara Lerpiniere, Jamie Lucas, Chris Olsen, Margarita Silva and John Sheahan

ATTACHMENT 2: Email in response to query regarding machines operating at less than 60KV or otherwise not complying with AS/NZS 3200.2.201, 2000.

Dear Dr Highfield

I refer to your email regarding comment on the Code of Practice and Safety Guide for Radiation Protection in Dentistry, Consultation Draft – July 2005.

It is difficult to accurately estimate the number of dental X-ray machines that don't comply with AS/NZS 3200.2.201:2000. Some of the older X-ray units may not comply with all aspects of the Standard. According to our data base, approximately 10% of dental X-ray units operate at less than 60kV.

These are generally older units and most of these units would not meet all the criteria listed in the above Standard as Standards are constantly being improved and updated. However it is expected that such older equipment is gradually being phased out and replaced by newer equipment.

Exposure to the primary beam is not appropriate.

The comments of the Victorian regulator are noted. The code is intended as a national document and the figures in the RIS are estimates of the national situation.

	<p><i>Routine inspection tests carried out on these X-ray units some years ago, found that many of the older X-ray units failed one or more of the following compliance tests: reproducibility, linearity, timer and kV accuracy.</i></p> <p><i>In most instances, X-ray units can be repaired or adjusted so that they meet all the requirements of the Standard. However, it may not be possible to repair some of the older units, especially if the kV is inaccurate. If the unit is operating at less than the nominal kV and it can't be adjusted, the X-ray unit is then required to be replaced as it could lead to considerably higher radiation doses to the patient per exposure.</i></p> <p><i>Hope this information helps. Please contact Ingrid Cardillo on 9637 4181 should you have any further queries.</i></p> <p><i>Regards Ingrid Cardillo</i></p>	
<p>06 Daryl S Holmes (MD) Rosemary A McIntosh (Op Manager) 1300Smiles Ltd</p>	<p>After reviewing the code, we have identified an area that is unclear:</p> <p>2.2 Responsibilities of the Responsible Person</p> <p>2.2.3 (j) prepare local rules for handling of any unforeseeable accidents and emergencies, assemble an emergency kit and take charge of such situations;</p> <p>I have contacted ARPANSA and have been advised that they did not know what would constitute an emergency kit. Their recommendation was to make a submission to have reference to an emergency kit removed from this subsection of the document.</p>	<p>This will be deleted.</p>
<p>07 Dr H Calache Clinical Director Dental Health Services Victoria</p>	<p>Code of Practice</p> <p><u>Section 2.4.3 (b)</u></p> <p>.....all aspects of the examination specified in 2.2.1. Should read ...<i>specified in 2.4.1.</i></p> <p><u>Section 4.1.4</u></p> <p>Oblique Lateral Mandible examinations are performed by radiographers in the Radiology Department at the Royal Dental Hospital of Melbourne using an extra-oral x-ray tube and film cassettes with rare earth intensifying screens.</p> <p>This technique is commonly used for special needs patients where it is not possible to take an OPG due to their impairment or mobility issues, for</p>	<p>Agreed.</p> <p>Modified paragraph to say “unless otherwise authorised by the regulatory authority”.</p>

	<p>example, involuntary movement with cerebral palsy, supine and unresponsive on a trolley. The views are often very useful for diagnosis and treatment planning for treatment under general anaesthesia, and are usually the only x-ray examination option for these patients.</p> <p>The technique is occasionally used to demonstrate submandibular calculi.</p> <p>The images are tightly collimated using a long cone (300mm FSD and 58mm cone end diameter) on the x-ray tube, the exposure is the equivalent of an exposure for an intra-oral lower incisors x-ray. The technique is in line with the general radiography practice of taking oblique lateral mandible exposures using a low kV non-bucky technique.</p> <p><u>Conclusion</u></p> <p>Discontinuation of this technique would adversely affect patient care.</p> <p><u>Section 6.2.1</u></p> <p>This section should be re-worded to read as follows:</p> <p>No person must be present in the room during a radiographic exposure unless:</p> <p>(a) their presence is necessary for the conduct of the examination <i>and are at least 2 meters from the X-ray tube and not in line with the primary beam;</i> <i>or</i> (b) <i>they are either</i> (i) <i>behind a shield</i> (ii) <i>wearing a protective apron</i></p>	<p>The comment is accepted, but with different wording than proposed.</p>
<p>08 Lyn Oliver ACPSEM</p>	<p>Individual members, who have some expertise and experience in radiation protection, have provided a number of minor comments and suggestions that would improve the document or make it more useful to the potential stakeholders. These are provided in the attached pages. In particular, there was widespread agreement that the QA section is far too complicated for dental practices and is unlikely to be utilised in a clinical environment.</p> <p>In this regard, Dr Don McLean (Chairperson of the ACPSEM Radiology Specialty Group) has considerable expertise in this field and would be happy to assist ARPANSA on the QA section of the document in any way that is</p>	

	<p>practical.</p> <p style="text-align: center;">Code of Practice for Radiation Protection in Dentistry</p> <ol style="list-style-type: none"> 1. In all instances the ‘responsible person’ should be written with initial capitals (i.e. Responsible Person). In many places initial capitals are used, but in others, e.g. line 30, lower case is used. 2. Page 14 Line 41: What is the relevance of hand & wrist radiography in the context of dental radiography? Surely this should fall in domain of Radiology COP? 3. Page 15 Lines 67-69: Dose limits do not apply to patients but dose constraints do. That being the case it needs to be made clear that both dose limits and dose constraints are not exceeded. Dose constraint needs to be defined in glossary. 4. Page 15 Lines 85-86: What is the nature and intention of the <i>medical</i> services referred to? It seems curious to require this in context of dental radiology. Lines 89-91: Again what is the nature of the <i>emergency kit</i>? 5. Page 17 Line 159: Spelling of <i>individual</i>. 6. It is suggest that Section 2 be restructured with the following subheadings: <ol style="list-style-type: none"> a. Responsibilities of the Responsible Person b. Responsibilities of the Radiation Safety Officer c. Responsibilities of the Clinician operating the Dental X-ray Equipment d. Responsibilities of the Referrer e. Responsibilities of the Persons supplying, installing and servicing dental x-ray equipment <p>Lines 73 – 101 would then come under the RSO section.</p> 7. Section 2.3.1 relates to the responsibilities of the Responsible Person and should be under section 2.2 and not as a separate section. 8. Sections 2.3.2 – 2.3.4 should be moved to section 6.8 	<p>Agreed</p> <p>Relevant to some orthodontic work and will be retained.</p> <p>Constraints will be defined, however they are not limits that are not to be exceeded.</p> <p>To be deleted</p> <p>Amended</p> <p>Most of these suggestions are agreed. It is not intended to have a separate section for RSO, as in dentistry in many cases the Responsible Person and the RSO are the same person and it is ultimately the Responsible Person who must ensure that these duties are done.</p> <p>Agreed.</p> <p>These sections have been amended. It is not proposed to have a separate section on personal monitoring as dentists are often exempt from monitoring.</p>
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	<p>9. Section 2.6 is the responsibility of the Responsible Person and should be under section 2.2 and not as a separate section.</p> <p>10. Section 2.5 should be rewritten so that it starts “The referrer must” So that it is consistent with the other sections.</p> <p>11. Section 2.2.11 (line 144) refers to “the relevant dose constraints”. Dose constraints are not defined in the Glossary. This phrase is pointless without further explanation.</p> <p>12. It is suggested that Personal Monitoring become a separate section, rather than a subsection of Responsibilities.</p> <p>13. Section 2.3.3(b) (line 156) requires the Responsible Person to obtain a copy of the dose record associated with any previous employment in which ionizing radiations were used. There is no similar requirement in RPS5 (Portable Density/Moisture Gauges Code) or the recently approved RPS9 (Mining Code). It is important that all the RPS Codes are consistent. As it currently stands it would be a breach of the Dental Code if these previous records were not available even if the RSO had requested them. It is recommended that this becomes a “should” clause rather than a “must”.</p> <p>14. Line 178. Change “2.2.1” to “2.4.1”</p> <p>15. Page 18 Line 193: Retention of dental images for more than 5 years would not be normal practice in Hospitals. Suggest that this be reduced except for children when 7 may be appropriate.</p> <p>16. Page 18 Line 200: Should the requirement be <i>and/or</i> ?</p> <p>17. Section 3.2.2 must be reworded to refer to RPS8 and the clause “and approval for a project must be obtained from the regulatory authority, where necessary” deleted.</p> <p>18. Page 20 Line 247: <i>Films</i> should be <i>images</i>.</p> <p>19. Section 3.2.3, line 249 – again “dose constraints” are referred to without definition.</p>	<p>Agreed</p> <p>Agreed</p> <p>Definition to be included</p> <p>It is not proposed to have a separate section on personal monitoring as dentists are often exempt from monitoring.</p> <p>To be deleted or made consistent with RPS1. RHC to review final text as an issue for all Codes.</p> <p>Agreed</p> <p>The ADA has indicated that these requirements are consistent with medico-legal requirements.</p> <p>No</p> <p>Agreed</p> <p>Agreed</p> <p>Definition to be included</p>
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	<p>20. Page 21 lines 273-276: Relevance (see earlier comment)?</p> <p>21. Page 22 Lines 291-296: Issue of using Computed Radiography for OPG images does not seem to be addressed. Unclear whether this is correct place for it or not.</p> <p>22. Section 6.2.1(b)(ii) (line 345) and 6.7.1(d) (line 373)– suggest adding after “protective apron” “with a shielding value of not less than 0.3 mm lead equivalent at 150 kVp” (This is a requirement in NSW, specified in Radiation Guideline 6, part 3). Line 373 <i>wearing</i> should be <i>wear</i>.</p> <p>23. Page 27 References: Add RPS1 and RPS8</p> <p>24. Page 27 Line 433: AS/NZS 3200.1:1998 is newer version however I seriously doubt its relevance to this COP. Line 438 AS/NZS 3200.2.201: 2000 is newer version. Line 441: AS/NZS 32002.7: 1999 is newer version. Lines 444-446: Should be AS/NZS 3200.2.28:1994 and correct title is: <i>Medical Electrical Equipment Part 2.28- Particular Requirements for Safety – X-ray source assemblies and X-ray tube assemblies for medical diagnosis generators</i>. Lines 449-450: Too dated?</p> <p>25. Page 29 Line 480: Define dose constraint.</p> <p>26. Lines 482 – replace E_T with E</p> <p>27. Lines 490 – replace H_T with H</p> <p>28. Definitions of Effective Dose and Equivalent Dose should be identical with those given in Annex B of RPS1</p> <p>29. Page 30 Line 498: Would recommend against keeping term exposure as defined. It is not necessary when output of X-ray units can be measured in terms of absorbed dose or kerma to air. If used however, Line 500 – C/kg should be in brackets.</p> <p>30. Page 30 Lines 517 & 520: Preferred terms are now Source-Image Distance and Source-Skin Distance. Certainly <i>film</i> should be replaced with <i>image</i>.</p> <p>31. Delete lines 552-554. It is not necessary to define Sievert as both equivalent dose and effective dose are defined, including the unit.</p>	<p>Relevant to orthodontics.</p> <p>No change is necessary here.</p> <p>To be made consistent with Australian Standards</p> <p>Agreed</p> <p>To be checked for updated Standards</p> <p>Agreed</p> <p>Deleted the bracketed item</p> <p>Deleted the bracketed item</p> <p>Agreed</p> <p>To be deleted</p> <p>Agreed</p> <p>Preferred to keep the definition</p>
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	<p>32. Page 31 Lines 556-557: Would prefer to see speed defined as reciprocal of the absorbed dose to air (or air kerma)</p> <p>33. Annex 3 2(h) safe-light test. Sections 3 - 7 outlines a common dark room test where some of the film is not exposed to safe lights while other sections are exposed to 30 s, 60 s and 90 s of safe light exposure. This appears unnecessarily complex. For mammography the same test simply involves exposed and unexposed for a 2-minute duration. White and Pharoah¹ recommend 5 mins. The 3 grades of exposure add little to the test and simply make the pass/fail criteria more complex. Recommend that half the film be shielded from safe lights for 2 mins². This film is usually performed on exposed film as this is more representative of the real situation and the film is also more sensitive to fogging in this state. Ideally a step wedge would be exposed to radiation with the card then placed over this at right angles to the steps. Dental texts state that a dental image be exposed with a coin on top. If the image of the coin is seen the test is failed¹. The criteria “significant difference in blackness” is problematic. I realize dentists are unlikely to have densitometers (0.05 OD is the usual criteria), but perhaps the following criteria would be better; “clearly visible difference in film density when viewed on a light box”. Note the UK say ‘visible film fogging in 2 minutes or less’²</p> <p>²IPEM, Report No 77, “Recommended Standards for Routine Testing of Diagnostic X-ray Imaging Systems,” 1997.</p> <p style="text-align: center;">Safety Guide for Radiation Protection in Dentistry</p> <p>1. For compatibility with other RPS publications, insert a new section 1.1 Citation with the following text: This Safety Guide may be cited as the <i>Safety Guide for Radiation Protection in Dentistry (200x)</i>.</p> <p>2. Replace lines 955-957 with “The Safety Guide provides additional explanatory material on certain aspects of the Code of Practice for Radiation Protection in Dentistry.”</p> <p>3. Page 46 Line 978: Relevance?</p> <p>4. Page 48 Lines 1004-1009: This is repetitive. Same text is included in</p>	<p>Disagreed.</p> <p>Disagreed.</p> <p>Not necessary in Safety Guide but will be included.</p> <p>Agreed</p> <p>Relevant to orthodontics</p> <p>Noted</p>
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	<p>COP in section 2.4.1</p> <ol style="list-style-type: none"> 5. Section 3.3 should be rewritten in light of the publication of RPS8. 6. Page 51 Lines 1090-1106: Need to make reference to the use of CR as a technology. 7. Line 1113 – change “have demonstrated” to “have been demonstrated” 8. Line 1116 – change “D speed” to “D-speed” and “E speed” to “E-speed” to be consistent with the rest of the paragraph. 9. Page 53 Line 1170: <i>...can be produced...</i> 10. The formatting of section 6 does not follow the conventions used in the rest of the document. For example, subheadings are given in italics with the subject matter starting on the same line. 11. Page 57 Line 1343: Should term <i>carer</i> be used to cover the type of person referred to and perhaps define in glossary? 12. Table 2, page 62. The quoted effective dose for a chest x-ray is for a PA view only. The dose is substantially higher if a lateral view is performed as well. Suggest changing the wording under Examination to “Skull radiograph” and “PA Chest radiograph”. Reference to <i>air travel</i> should be separated from the entry referring to <i>barium meals</i> 13. Section 5.5 Quality Assurance in processing. The process outlined in sections a-d is extremely laborious and it is unlikely that it would be utilized in a clinical environment. Instead it is suggested that the required step wedge image be achieved using a physical step wedge, rather than 4 exposures on the one film - very time consuming and error prone. Suitable step wedges are available commercially or can be fabricated simply from the lead backing of dental film packs. They can be simply exposed once at set factors. A film can be used as a reference film, with subsequent exposures of the step wedge compared to the reference. The book by White and Pharoah has a good section on radiographic QC procedures. [S. C. White and M. J. Pharoah, <i>Oral Radiology</i>, 4th ed (Mosby, 2000)] 	<p>Agreed</p> <p>Noted</p> <p>Agreed</p> <p>Agreed</p> <p>Agreed</p> <p>Noted</p> <p>Agreed</p> <p>Agreed</p> <p>The QA section has been modified to simplify the procedure.</p>
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<p>09 Dr Matthew Fisher ADA, NSW Branch</p>	<p>INTRODUCTION</p> <p>The Australian Dental Association (NSW Branch)</p> <p>The Australian Dental Association (NSW Branch) Limited (“ADANSW”) is the professional association representing dentists, whether practising in the public or private sector, in New South Wales and the Australian Capital Territory. It provides services for and on behalf of members to enable them to deliver the best possible standard of care to the community. The Branch has over 3200 members which represents approximately 90% of practising dentists in NSW (75% of registered dentists); 180 members are practising in the ACT, representing 75% of registered dentists.</p> <p>The ADA NSW Branch welcomes the opportunity to comment on the Draft Code of Practice and Safety Guide for Radiation Protection in Dentistry (2005). Our submission will sequentially address points of concern; many of the points raised highlight where ARPANSA should consider clarification and/or the rationale behind the draft.</p> <p>The Branch is concerned about the source of the information used and assumptions made to construct aspects of the Code and the RIS. For example, one of the concerns here relates to affordability of access and the real cost of running a practice either in the private or public sector. The cost assumption in the regulatory impact statement on Page 21 paragraph 80 is incorrect which raises issue about the accuracy of information used in drawing conclusions as the cost assumptions in this from page 16 to 19 are virtually all assumptions with no back up of the figures from anywhere. The same must be said for the assumptions about health & safety (pages 12-14). A good example is paragraph 14 where it is assumed that self regulation would increase occupational exposure to 0.24 mSv. When the reference notes are checked, it is apparent that this is an increase of over 20 times the acknowledged current exposure; the assumption here is that if practitioners are not regulated, dentists will not try to minimise radiation exposure. The Branch believes this is spurious.</p> <p>A primary concern of the Branch is the inter-relationship with existing state and territory legislation and how individual jurisdictions may interpret the guide; this may have a direct impact on practices and therefore services to the community. Specific points of concern are listed below:</p> <p>SECTION 2. RESPONSIBILITIES</p>	<p>Noted</p> <p>Noted</p> <p>No information is provided to support the assertion that the RIS assumptions are incorrect or inaccurate.</p> <p>It is expected that all jurisdictions will adopt the Code as requirements. The Safety Guide provides supporting information to dentists.</p>
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	<p>2.2 RESPONSIBILITIES OF THE RESPONSIBLE PERSON</p> <p>70 2.2.3 The Branch request clarification that the Radiation Safety Officer may also be the responsible person and further clarification that in smaller practices (as opposed to multi operator clinics) that this may be a dentist (who has a user licence).</p> <p>2.3 PERSONAL MONITORING AND DOSE RECORDS</p> <p>147 2.3.1 The Branch contends that the record of dentistry in this area is exemplary and that personal monitoring may be overly onerous given dentistry’s record. The Branch believes that an automatic exemption should be granted to dentistry.</p> <p>2.7 RESPONSIBILITIES OF PERSONS SUPPLYING, INSTALLING AND SERVICING DENTAL X-RAY EQUIPMENT</p> <p>196 2.7.1 The logical extension of this point is that the supplier is (and should be) guaranteeing that the equipment complies; the Branch believes that they should issue the first 5 year compliance certificate as part of installation. Suppliers’ representatives are not prohibited from being the Certified Radiation Expert (CRE) at that time so under the regulations as written they get to double dip, i.e. sell the equipment, install and then charge for compliance testing. This does not appear to be in the public interest from a cost efficiency perspective.</p> <p>SECTION 4. EQUIPMENT AND SITE REQUIREMENTS</p> <p>4.1 COMPLIANCE WITH AUSTRALIAN STANDARDS AND REGULATORY AUTHORITY REQUIREMENTS</p> <p>261 4.1.2 The Branch questions why is this necessary if measured doses in dentistry have been and are very low; so why should the “fleet” have to comply with current standards. Older machines will gradually be replaced and will comply with newer standards. Forced obsolescence of machines still performing to their original specifications (which must be checked regularly by the CRE) is unnecessarily costly and will discourage compliance. Again this does not appear to be in the public interest from a cost efficiency perspective. Having the Australian Standard referred to in the code gives an opportunity for this body (Standards Australia is dominated by industry groups) to make the</p>	<p>This is already stated.</p> <p>The Code provides that where doses are low exemption can be granted. Individual jurisdictions may choose to make this exemption broader.</p> <p>The Code does not preclude this.</p> <p>The Code does not force compliance with all of the requirements of new equipment on older machines, however there are a range of provisions that are relevant to radiation safety, where older equipment should be modified to comply or phased out over time. Discretion is provided to allow for adequate phase out time for replacement of machines.</p>
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	<p>current “fleet” of machines obsolete by making a small change to the standard. This would not require referral back to either the regulators, a professional body or the users, so there would be diminished accountability for this and gives a non statutory, unelected, industry based body too much power. This is not in the public interest.</p> <p>268 4.1.4 The Branch requests clarification if this includes OPG machines with TMJ tomography programmes? This is not explained well. This will ban an apparently useful technique for taking TMJ open and closed view using dental equipment (cone against the opposite TMJ)and intra oral films (occlusal against the TMJ in question). This results in a lesser dose to the patient than the alternative general purpose medical equipment.</p> <p>279 4.2 LOCATION OF X-RAY UNITS AND PROVISION OF STRUCTURAL SHIELDING</p> <p>The Branch requires clarification on what are the shielding requirements? The concern is that this will be left up to individual authorities to interpret. Our primary concern here will be the interpretation of individuals within jurisdictions and the impact on services, particularly cost.</p> <p>SECTION 5. IMAGE RECEPTORS AND FILM PROCESSING</p> <p>5.1 DIGITAL IMAGING SYSTEMS</p> <p>291 5.1.1 This is poorly expressed and should have the emphasis reversed, i.e. back up should be “appropriate computer back up, hard copy or written diagnostic report”. Hard copy back up defeats one of the primary purposes of digital imaging and is not consistent with future technology use.</p> <p>SECTION 6.7 POSITION OF OPERATOR DURING EXPOSURE</p> <p>6.7.1 371 (b) This point contains another reference to shielding without specification.</p> <p>ANNEX 1</p> <p>590 (e) The Branch questions why an amber light?</p>	<p>OPG machines are designed to take these TMJ views, hence it is perfectly legitimate and is not precluded by the existing wording. Amended wording also provides more flexibility</p> <p>Shielding is dependent on site-specific factors. It is appropriate for the regulatory authorities to determine.</p> <p>Agreed</p> <p>See above.</p> <p>These are requirements of the Standard.</p>
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	<p>600 (i) The Branch questions are electronic timers infallible?</p> <p>ANNEX 3</p> <p>698 The Branch questions why is size 3 advised against? These are still used by many practitioners for long bitewings. They may have other uses in certain intermediate patient sizes.</p> <p>761 5. The Branch questions why no mercury thermometers as they are very accurate. If well protected, they pose no danger and they are still used for medical purposes.</p> <p>SAFETY GUIDE</p> <p>1204 – Test film every day – The Branch believes that this may be totally inappropriate for one person surgeries (this is the majority of the industry) and, in particular, part-time (branch) practices. Surely once the developer life is established and protocol for replacement allows margin for error (e.g. testing shows 3 week life and protocol is 2 weeks replacement) this is an unnecessary procedure and a waste of costly staff time.</p> <p>1357 – This point demonstrates our concerns about the possible interpretation of a code of practice. If there is flexibility, why not indicate this flexibility in the code? The statement in lines 1357 & 1358 indicates that personal monitoring may be obligatory even though other parts of the code indicate that the local regulatory authority may give exemptions. The Branch questions the evidence base used here.</p> <p>1371 – Again indicates that good practices exist within dentistry now. This makes a mockery of the regulatory impact statement which assumes our occupational exposures are 20 times worse than those measured.</p> <p>SUMMARY</p> <p>ADA NSW Branch Ltd encourages the Commonwealth, State and Territory bodies to ensure that the appropriate balance is struck between regulation, compliance and public (safety) interest without unnecessary overburden and impact on health services. The position of the Branch is that dental practitioners are well aware of their responsibilities related to radiation protection in dentistry and have implemented systems and strategies to ensure</p>	<p>This would only work if dental arches were straight and all interproximal surfaces were parallel to each other. It is normal to use 2 x size 2 films for a full complement of teeth, using different horizontal angles for premolar and molar areas.</p> <p>This is incorrect. They are not used , for OH & S reasons.</p> <p>The draft Code did not require daily films after establishing the normal developer life, however the QA procedure has been modified to simplify the requirement.</p> <p>Radiation protection regulations require monitoring by persons using radiation equipment, unless an exemption is granted. The Code is consistent with these requirements.</p> <p>The RIS comments on the possible impact of what could occur if there were no controls over a period of time, not that exposures are 20 times higher than measured.</p> <p>Noted</p>
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	that patients receive quality health services that are safe and affordable.	
10 Mr Michael Williamson General Secretary, HSU	<p>The HSU applauds the focus of ARPANSA on the safety of patients and staff which the Code of Practice strives to achieve. The Draft has been well researched, and only minor revisions are suggested. The HSU appreciates this opportunity to contribute to the protection of workers, and to the welfare of the public.</p> <p>The following comments, therefore, are intended to enhance a well-considered document.</p> <ol style="list-style-type: none"> 1. Line 41: it is not clear why a Code of Practice for Dentistry would cover "hand and wrist radiography for the purpose of the determination of the bone age." Determination of bone age would properly be covered by a code of practice for DEXA and/or radiography, and probably only needs citation in this Code. 2. In Section 2.2.3, there should be a requirement for the Responsible Person to establish and document procedures for the handover of control of x-ray equipment to service personnel so that it is perfectly clear at any time who is the person in charge of the apparatus. 3. Section 2.2.11: This requirement is excessive. It would be more realistic, and, consistent with state legislation, to require notification of the state regulatory body only if any exposure meets the state's definition of a reportable incident. 4. Section 2.3.1. The requirement for exemption by the regulatory body is excessive. Exemption could be approved by the Radiation Safety Officer or Radiation Safety Committee in defined circumstances. 5. Section 2.3.4. Dose records should also be freely available to the RSO (if the RSO is not the Responsible person,), and to medical practitioners, industrial hygienists, medical physicists, Union officials, and any other person authorised by the occupationally exposed person. 6. Section 2.4.1 (c) should include a reference to the need for delegated staff to hold the requisite licence or exemption. 7. Section 2.6 should specify whose responsibility it is to maintain and 	<p>Noted</p> <p>It is relevant to orthodontics.</p> <p>Disagreed.</p> <p>Exceeding dose limits is currently reportable in all jurisdictions.</p> <p>Given that regulation requires monitoring, only the regulatory body can exempt.</p> <p>Dose record requirements should be consistent with RPS1 and are also subject to privacy requirements.</p> <p>Already covered by (b) which requires that they be appropriately authorised.</p> <p>Agreed</p>

	<p>retain records. It is probably appropriate to allocate this responsibility to the referring dentist.</p> <p>8. Section 2.8. There must be a protocol to manage handover of control of the x-ray equipment from the responsible person to the service engineer, and back, such that there can never be doubt about who is in control of the equipment and therefore responsible for the safety of other personnel.</p> <p>9. Section 2 should also include reference to the need for registration of premises where required by the regulatory body.</p> <p>10. Section 3.2.2 cites a superseded Standard. The current standard is ARPANSA RPS8.</p> <p>11. In Section 4.2, there should be a reference to the need to consult the RSO about shielding when structural renovations to the practice are made.</p> <p>12. Line 296, Section 5.1.3 "trained and licensed if required by the regulatory body..."</p> <p>13. Section 5.6 Enrolment in a relevant external Quality Assurance Program should be mandatory.</p> <p>14. Section 6.6 Could be better phrased, to read: "Where it is necessary to hold or restrain a patient during radiographic examinations, the operator must not be the restraining person, and staff of the Dental Practice must not regularly be required to restrain any patients. Parents or Carers who are called to assist must be provided with protective equipment and positioned so that they are not exposed to the primary beam. No single person may regularly restrain a patient.</p> <p>15. Section 6.8. Persons who are provided personal monitoring devices (Dose Badges) must be trained in their proper use.</p> <p>16. References (Lines 418-450) - this Section must include RPS8 and RPS 1.</p> <p>17. In addition to appropriate signage which warns that x-rays may be in use, there should be a red warning light outside the room which is lit when the x-ray is in operation.</p>	<p>Disagreed</p> <p>Already covered in 2.2.1.</p> <p>Agreed.</p> <p>In many cases in dentistry the RSO and Responsible Person are the same so this would have little value.</p> <p>Separate licensing for digital equipment is not required and licensing is covered elsewhere.</p> <p>Disagreed.</p> <p>It is not proposed that staff of the dental practice be permitted to hold patients.</p> <p>Training is already a responsibility of the Responsible Person.</p> <p>Agreed</p> <p>Not applicable to dentistry</p>
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	<p>18. Replace lines 1061 and 1062 with the appropriate reference to RPS8.</p> <p>19. Lines 1401 and 1402 with: "When doses are limited below the thresholds, tissue reactions are not observed."</p> <p>20. Line 1408: insert "at higher doses" after "linearly with dose"</p> <p>21. Lines 1409 and 1425 quote risk factors in relation to millisieverts - this is not the conventional unit for describing risk. The conventional unit is quoted in the Regulatory Impact Statement (point 6).</p> <p>22. Line 1435 - this requires clarification by appending the words: "to an individual or group".</p> <p>Once again, thank you for the opportunity to provide comments to the Code. I would appreciate any feedback/responses addressed to myself.</p>	<p>Agreed</p> <p>In regard to comments 19 – 22, these relate to a standard Annex and the text of the Annex will be retained.</p>
<p>11 Andrew McAuliffe A/Director Oral Health Unit</p>	<p style="text-align: center;">RADIATION PROTECTION IN DENTISTRY (2005) – COMMENT ON DRAFT</p> <p>Code of Practice</p> <p>Section 2.2.3 refers to the Radiation Safety Officer responsibilities and includes as (h), a duty for arrangement for required medical services to be provided. This statement is unclear and it may well fall, in the public sector, outside the capacity of a Radiation Safety Officer to arrange such services. Consideration may need to be given to clarifying this point or deleting.</p> <p>Section 2.3.3 (b) requires doses be assessed as a result of any previous employment. This will be particularly difficult to be compliant with in Queensland Health due to the high number of locum staff employed, often from overseas. It would be unreasonable to expect a dentist or an overseas employer to have this information where the requirements in that country may be quite different.</p> <p>Section 2.5 requires the reason for the radiological investigation to be noted. It should be sufficient in dentistry to accept that the patient seeks a dental examination and that depending on recency of radiographs and clinical examination, dental radiographs were required. Attempts to explain on clinical</p>	<p>To be deleted</p> <p>To be deleted or made consistent with RPS1, subject to RHC discussion on relevance for all Codes.</p> <p>“Radiological” has been changed to “radiographic”</p>

	<p>notes the reason for radiographs as part of an examination would seem unjustified.</p> <p>Section 2.6 deals with maintenance of radiographic records. The timeframes indicated may not be consistent with State legislation. The time for keeping radiographic records should be consistent with the health record (as it forms part of the health record), and would best be addressed by indicating that time frames need to be consistent with individual State requirements for retention of health records.</p> <p>Section 6.8.1 (in connection with 2.3.1) implies an exemption may be granted by a regulatory authority, but where not granted certain requirements rests with the Responsible Person. There would appear to be substantial local State discretion in providing opportunity for exemption. There may be some benefit in providing guidelines as to when such exemption would be justified, and under what circumstances such exemption would reasonably be revoked.</p>	<p>The timeframes are consistent with medico-legal requirements and public hospital disposal schedules.</p> <p>There is an explanation in the Safety Guide.</p>
<p>12 Paul Cardew Chief Physicist, Hunter New England Area Health Service</p>	<p>Thank you for the opportunity to review and comment on the draft document '<i>Code of Practice and Safety Guide – Radiation Protection in Dentistry</i>'.</p> <p>For a practice that with currently used x-ray equipment involves exposures around 1/4000 of that of a chest CT, this code seems to be taking a sledgehammer to crack a nut. Whilst it is good in theory to specify the level of detail set out in the report, its very size means that it is unlikely to be used by the vast majority of dental practices – it is comparable in size to ICRP 57 “Radiological Protection of the Worker in Medicine and Dentistry” without the Appendices. If all the detail is to be retained, the safety guide should be written so that its much shorter section only includes the essentials for the safe operation of the x-ray equipment.</p> <p>In real life, most practices operate with a dentist who determines whether an x-ray will assist with his management of the patient. That will determine whether an x-ray is taken, and I cannot see what medical history might change this decision. In NSW the dentist is required to be licensed, and the equipment to be registered. The registration process provides for safety assessments of the equipment and the way in which it is used, as well as limiting access to this type of equipment to appropriately licensed persons. Personal monitoring of dental users is not required due to the historically low doses received, and low risk of receiving radiation exposures of any significance. This is in line with ICRP 75 recommendations that individual monitoring is not required where all</p>	<p>The Code specifies requirements and the Safety Guide provides information relevant to the Code. This format and level of detail is generally accepted.</p> <p>Noted.</p>

	<p>members of a group are unlikely to receive exposures in excess of 1mSv in a year.</p> <p>If we are to accept that dental radiography is one of the lowest risk medical radiation procedures, and that staff doses are such that they do not approach the level that requires individual monitoring let alone the dose limits for occupationally exposed persons, how can we justify some of the requirements of this code. In particular why are there so many responsibilities imposed in section 2 of the Code. This section appears far to long and detailed to be workable in practice. Reading this section and then looking at the obligations imposed in section 4 raises a number of points that I have summarised below.</p> <p><i>The appointment of a responsible person and a radiation safety officer who must have all the training and knowledge required in section 2 implies a work environment far from the dental practice. I cannot see what 2.2.3.(j) alludes to and personally after 30+ years dealing with radiation safety matters have no idea what emergency kit to prepare for a dental practice.</i></p> <p><i>Similarly why require a person to consult and liaise with the regulatory authority 2.2.3.(c), or determine which staff are “persons occupationally exposed to radiation”?</i></p> <p><i>If as Section 2.4.1.(b) states, the dentist must remain ultimately responsible for all of the aspects of the examination specified in 2.2.1, do we need section 2.2 ?</i></p> <p><i>There is also a high degree of duplication in the code 4.2.1 requires</i></p> <p><i>4.2.1 The responsible person must ensure that there is appropriate radiation shielding in the X-ray room and appropriate shielding for operators, such that no person receives a radiation dose in excess of the relevant radiation protection limit.</i></p> <p><i>2.2.2 states</i></p> <p><i>2.2.2 The Responsible Person must ensure that radiation doses:</i></p> <p><i>(a) are kept as low as reasonably achievable; and</i></p> <p><i>(b) do not exceed the appropriate dose limits specified in Schedule 1.</i></p> <p><i>It would also be good to just the use one term i.e. “dose limit” as opposed to also referring to a “radiation protection limit”.</i></p>	<p>In most small practices the Responsible Person and RSO would be the same. 2.2.3(j) will be deleted.</p> <p>These are standard requirements and are appropriate to retain.</p> <p>2.1 & 2.2 will be combined.</p> <p>Noted</p> <p>Agreed</p>
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	<p><i>Section 2.2.9 states the Responsible person must submit plans to the regulatory authority but section 4.2.2 states that approvals only need to be obtained where required. The two sections are in part repetitive and in part at odds with each other.</i></p> <p>With regard to the daily QC of film processing, it is my experience that making it as complex as the procedures set out in the document are doomed to failure. I say this because I have tried to implement exactly such a program. I even went to the level</p> <p>I note that the submission from the ACPSEM has provided comments on much of the detail included in the code and the safety guide, and these would improve the content. I would prefer to stress that whilst the document would be good for the medical physicists and others involved in Dental safety and QA, it implies a degree of hazard that does not exist, and proposes measures that do not fit with the concept of optimization. I would fully support either its simplification, or a summary section that will be used by the vast majority of dentists. The alternative is, I fear, it being largely ignored and a lot of its good content wasted.</p>	<p>2.2.9 will be modified.</p> <p>The procedure has been modified and simplified.</p> <p>The QA section has been simplified.</p>
<p>13 Clive Wright Chief Dental Officer, NSW Centre for Oral Health Strategy NSW</p> <p>and</p> <p>Dr Mark Schifter Dept of Oral Medicine, Oral Pathology & Special Care Dentistry, Westmead Centre for Oral Health</p>	<p>Please find attached comment as provided by Dr Mark Schifter and accept the same as the submission from NSW oral health services.</p> <p><u>General Issues/Concerns</u></p> <p>This document is typical of Federal Government documents, in that it is quite vague and consistently defers to local State and Territory (radiation control) regulations.</p> <p>However, the overriding criticism is that the Guide is out of date with the current, digital imaging/radiographic technology applicable to dento-maxillofacial region. Technology such as the Scanora™, or cone beam computerised tomography (CBCT), or preferred term, cone beam volumetric tomography (CBVT) (such as the Newtom QR 9000 (Aperio, Inc., Sarasota, Fla.), or ISI/CAT, (Imaging Science, International, Hatfield Penn., and Xoran Technologies, Ann Arbor, Mich.) This technology is going to revolutionise dento-maxillo-facial imaging/radiography. Specific published applications of this new technology include:</p> <ul style="list-style-type: none"> • evaluation of palatal root resorption of maxillary lateral incisors when the neighbouring canines are slow to erupt; 	<p>State and Territory regulation is relevant to the Code.</p> <p>The wording of the Code does not restrict these technologies, and it is not appropriate to list specific brands of equipment – however amendments to the scope and to Section 4.1 have been included in response.</p>

	<ul style="list-style-type: none"> • dental implant imaging; and • surgical treatment planning, risk assessment, and treatment outcomes of impacted mandibular third molars <p>A strong case needs to be made to ensure these emerging technologies are not restricted to be used exclusively only by medical radiologists/radiographers but are available to be utilised by dental professionals/practitioners.</p> <p><u>Specific Issues/Concerns</u></p> <ul style="list-style-type: none"> • Item 2.2.3, page 15: Radiation Safety Officer <p>It would be simpler that for private, particularly solo dental practices, that by default the designated Radiation Safety Officer is the owner/operator of the dental radiographic equipment, unless otherwise documented and that this is so prescribed by the Code of Practice.</p> <ul style="list-style-type: none"> • Item 4.1.6, page 21: General Purpose Medical X-Ray Equipment must not be used for intra-oral dental radiography. <p>This blanket prohibition is inappropriate. Mr Bruce Waters here at the WCOH has developed a radiographic technique for taking vertex occlusal radiographs, that lessens the radiation dose to the patient utilising so called “medical x-ray equipment”.</p> <ul style="list-style-type: none"> • Item 5.1.1, page 22: <p>This statement as it presently reads is too vague and imprecise. Ideally, all three recommendations should be enforced.</p> <ul style="list-style-type: none"> • Lines 1278 – 1287, page 56: <i>Protective Drapes</i>. • Lines 1288 – 1298, page 56: <i>Pregnancy</i>. • Lines 1299 – 1310, page 56: <i>Children</i>. <p>The recommendations regarding the indications for the use of protective lead drapes should be far more explicit. There should be a strong opening sentence clearly stating that:</p> <p>“Protective Lead Drapes, including Thyroid Collars are not required for routine</p>	<p>Noted</p> <p>This is not necessary and may be overly prescriptive.</p> <p>This is not an intra-oral technique.</p> <p>All three are not necessary, however some modification has been made.</p> <p>The existing statements on aprons and thyroids collars were thought to be more appropriate and are to be retained</p>
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	<p>dental radiography.”</p> <p>Followed by a clarifying statement that:</p> <p>“The exception to this recommendation is when taking occlusal views of the maxilla in children and women of child bearing age, when the x-ray beam is directed downwards to wards the patients neck (thyroid) and/or trunk (gonads and/or uterus).”</p> <ul style="list-style-type: none"> • Lines 1339 – 1344. Holding of patients, page 57: <p>The recommendation that “the patient should be restrained by someone occupationally not exposed to radiation, such as a member of the patient’s family.” is neither practical nor sensible. For certain radiographic examinations, namely OPG’s, use has to be made of a skilled experienced operator to hold the patient but not interfere in the proper functioning of the OPG machine. The question of liability needs to be clarified if a “member of the public” as opposed to a health professional is injured whilst restraining a patient. This needs to be better expressed, and an appreciation that on occasion, given their skill and experience, a dental health professional, who is exposed to radiation occupationally, is the best person to restrain an uncooperative patient for radiographic examination.</p> <ul style="list-style-type: none"> • Lines 1475 – 1505. Annex 2 Doses and Risks from Dental Radiographic Examinations, pages 61 and 62: <p>This Annex and its two tables are very useful, and should be developed as posters suitable for viewing by the public so as to assist in educating the general public as to how incredibly safe is the practice of routine dental radiography.</p> <p>In closing, the Code and Practice Safety Guide is overall useful. It suffers from wordiness, excessively bureaucratic language, and needs to be more explicit and clear as to its key recommendations. I have significant concerns with this document in regards to two essential areas, and this needs to be strongly conveyed to the authors:</p> <ol style="list-style-type: none"> 1. Omission of any discussion or guidelines regarding the digital imaging/radiographic technology applicable to dento-maxillofacial region, specifically the “mini-cranial-facial CTs” such as the 	<p>Noted, but no change is proposed.</p> <p>This issue of a possible poster will be discussed with the Radiation Health Committee.</p> <p>Noted.</p>
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	<p>Scanora™, or machines exploiting cone beam volumetric tomography (CBVT) technology such as the Newtom QR 9000 or the ISI/CAT (DentoCAT).</p> <p>This omission needs to be rectified. This omission would impede access to this technology, vital for better and safer imaging for implants, pre-prosthetic and wisdom teeth surgery by dental health practitioners, and would result in it being restricted to use only by medical radiographers and radiologists. I would suggest this would result in limiting the availability of this technology, potentially increasing the access costs for patients, and poor utilisation of the full potential of this technology. There needs to be a clear statement allowing access and use of this technology by dental health professionals.</p> <p>2. Explicit, clear unambiguous guidelines stipulating that there is no need for the use of lead protective aprons and thyroid collars, except for the taking of maxillary occlusal radiographs in young children and women of child-bearing age.</p> <p>Lastly, I do wish to complement the authors for their annex, Annex 2, which clearly details how comparatively and incredibly safe is routine dental radiography. I would go further and suggest that the authors be asked to provide this information in the form of a poster that can be available to be read by the general public wherever dental radiographic equipment is placed, so as to educate them as to safety of dental radiography.</p>	<p>The existing draft does not restrict such technologies, but amendments to the scope and Section 4.1 have been made</p> <p>The Code specifies things that are required. The Safety Guide gives advice that aprons are not necessary for routine use. The Exception proposed for only one procedure is perhaps too prescriptive.</p> <p>Noted. ARPANSA would not object to the material being used in the preparation of posters.</p>
<p>14 Dr Alan Nerwich President ANZAE 11th Floor, 60 Park St, Sydney, NSW, 2000</p>	<p>ANZAE appreciates the effort of the Radiation Health Committee in drafting this code. There are, however, some issues which concern our Academy and these are as follows:</p> <ol style="list-style-type: none"> 1. Considering the small amount of radiation in dental practice (as has been documented in the draft code) the need for Radiation Safety Officers, continuous testing etc. does appear excessive and will lead to significant demands on time and cost. 2. Line 90 states that it would be required to have emergency procedures and an emergency kit in case of dangerous radiation exposures. What emergency procedures and kit is this referring to? There has never been a serious injury in dentistry requiring such kits or procedures to date. 3. Line 776 states that ventilation of dark rooms is required. Is this necessary if 	<p>In many dental practices the Responsible Person and RSO will be the same so there will be no additional cost. QA procedures have been modified to be simpler.</p> <p>This will be deleted.</p> <p>This applies to a darkroom, not a benchtop processor.</p>

	<p>the developer and fixer are in small cups and usually covered?</p> <p>4. Line 838 states that films should be washed in clean running water. The water should be renewed at a rate of 8 times per hour. Films should be rinsed for 30 mins. This may be acceptable in Victoria but in NSW we have the worst drought in 100yrs and severe water restrictions. In the experience of my practice over the last 30 years, simply soaking the films in a jug of water for an hour adequately removes all fixer residues.</p> <p>5. Line 1041 states that the practitioner could reduce amount of radiographs by the use of alternative methods such as apex locators instead of working length radiographs. Apex locators are an aid and not a replacement for working length radiographs. There could also be medicolegal implications regarding this statement.</p> <p>6. Line 1127 states that automatic processors are preferable over manual film processing. My observations (as well as all others in the ANZAE Executive) have been that automatic processors produce inferior finished films than a well processed manually developed film. That's apart from their longer (and unsuitable for endodontics) processing time.</p> <p>Thank you for the opportunity to comment on the above Draft Code of Practice and Safety Guide for Radiation Protection in Dentistry. I hope that my comments will be helpful when formulating the final draft.</p>	<p>This is not a requirement, it is advisory and local circumstances may dictate a different approach.</p> <p>It is an advisory statement (not a requirement) in the Safety Guide, which says that Apex locators MAY reduce the need for radiographic examinations. There is no recommendation to replace radiographic examination with apex locators.</p> <p>The working group believes that automatic processing will lead to consistently better results.</p>
<p>15 Malcolm Coombs</p>	<p>Further to our conversation of last week concerning the Radiation Guidelines. I feel there needs to be some form of recognition of Cone Beam Technology (CBT), as it has been designed specifically for Dental and Maxillofacial Radiology. I feel this is an opportunity to be up to date with technology rather than catching up with it.</p> <p>CBT is a single scan volumetric beam and closely allied to panoramic tomography. The level of patient radiation is similar to that of panoramic and much less than conventional CT, even though the final images produced appear similar to conventional CT. That is the only resemblance.</p> <p>As far as Intra oral Radiography is concerned I think the time has come to make “rectangular collimation” mandatory. This is an opportunity to greatly reduce the radiation to the patient even though Intra oral dosages are considered to be small. It will lead to greater use of the paralleling technique and raise the standards of dental radiology as it will apply to all members of the</p>	<p>The existing wording does not exclude thisa technology, however, amendments to the scope and to section 4.1 have been made..</p> <p>While rectangular collimation can reduce doses, it is also harder to align and the increased number of retakes is likely to outweigh the dose reductions from better collimation. It is therefore not appropriate to make it mandatory.</p>

	dental team who are involved in the taking of dental radiographs.	
16 Paul Marks Radiation Safety Program Victoria	<p>These are just a few thoughts and comments in regards to the new dental code. I have used the line numbers so it should be fairly easy to relate them to sentences/paragraphs in the code and safety guide.</p> <p>30 How does the term ‘responsible person’ fit into the thinking and definitions associated with the new Victorian Radiation Act?</p> <p>100 Definition of ‘occupationally exposed’ persons – not on the glossary.</p> <p>237 The code refers to the current but possibly changing research involving human volunteers code (RSP 8) – will this be a problem?</p> <p>255 What about volumetric dental imaging systems, CT head units etc.</p> <p>379 Exemption from personal monitoring?</p> <p>380 Other dental equipment?</p> <p>I have had a look at the safety guide and it looks OK, the only other area that may need to be addressed is dental assistants/nurses and the taking or radiographs.</p>	<p>For Victoria to consider.</p> <p>RPS1 covers this.</p> <p>It will be changed to refer to RPS8.</p> <p>Amended scope and section 4.1.</p> <p>Already covered in the Code.</p> <p>Not sure what this means.</p> <p>The Code provides for properly trained and authorised dental auxiliaries to take radiographs.</p>
17 Lorraine Plues Director Radiation Control Dept of Environment and Conservation (NSW)	<p>The Department of Environment and Conservation and the Radiation Advisory Council have reviewed these draft documents to ensure that they adequately address the radiation risks associated with the use of radiation in dentistry. General and specific comments on these documents are provided in the attachment to this letter.</p> <p>Subject to the comments provided in the attachment on specific aspects of the RIS (section 57 estimate of frequency of non-compliance of apparatus, and the appointment of Radiation Safety Officers in NSW), the RIS is considered to be a fair determination of the costs and benefits associated with the three alternative scenarios.</p> <p>General Comment</p> <p>The requirement that each practice be required to appoint a radiation safety officer (RSO) is impractical and unworkable as in most cases a dental practice may only employ 1 or 2 dentists and the radiation dose rates are low. The NSW Department of Environment and Conservation (DEC) considers that this</p>	<p>Noted.</p> <p>The Code envisages that one of the dentists will perform this function, so there would be little extra cost. The requirement is thought necessary to formalise responsibility for radiation</p>

	<p>requirement is unnecessary and should be removed or at least small practices be exempted.</p> <p>The DEC is concerned about the proposal for dental X-ray equipment to meet the new Australian Standard. The Regulatory Impact Statement estimates that approximately 5% of dental X- ray equipment will not meet this standard. The DEC believes that the real figure, and consequently the cost of implementation will be much higher. A survey of radiation apparatus performed by DEC a few years ago found that in excess of 10% of radiation apparatus would not meet the requirements of DEC’s Guideline 6 <i>Registration requirements and industry best practice for ionising radiation apparatus used in diagnostic imaging.</i> (This guideline is no more stringent than the Australian Standard and is less broad in its scope).</p> <p>The adoption of the new Australian Standard is also likely to result in existing radiation apparatus being deemed non-compliant because of technicalities rather than radiation safety issues.</p> <p>There does not appear to be any specific requirement regarding the new Dental CTs.</p> <p>Specific Comments on Code of Practice</p> <p>Section 1.4 <i>Scope.</i> The reference to <i>hand and wrist radiography for the purpose of the determination of [the] bone age</i> is considered inappropriate in a dental document. The reference in section 4.1.5 of the Code of Practice makes it clear that this type of examination is not to be conducted on general dental x-ray equipment.</p> <p>Section 2. It is suggested that Section 2 should be restructured with the following subheadings to give a clearer delineation of responsibilities:</p> <ul style="list-style-type: none"> a) Responsibilities of the Responsible Person b) Responsibilities of the Radiation Safety Officer c) Responsibilities of the Clinician operating the Dental X-ray Equipment d) Responsibilities of the Referrer e) Responsibilities of the Persons supplying, installing and servicing dental x-ray equipment. <p>It would then follow that:</p>	<p>protection tasks.</p> <p>Only new equipment must meet the Standard, existing equipment must meet a restricted set of requirements intended to ensure an appropriate standard of radiation protection.</p> <p>It may be more than 5% in NSW but the RIS attempts to estimate a national figure.</p> <p>See above comment, which means that this is not likely.</p> <p>Noted.</p> <p>It is relevant to orthodontics and is still required.</p> <p>Most of these suggestions are agreed. It is not intended to have a separate section for RSO, as in dentistry in many cases the Responsible Person and the RSO are the same person and it is ultimately the Responsible Person who must ensure that these duties are done.</p>
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	<ul style="list-style-type: none"> • Lines 73-101 would then come under the RSO section. • Section 2.3.1 relating to the responsibilities of the Responsible Person should fall under Section 2.2. • Section 2.3.2 - 2.3.4 should be moved to Section 6.8. • Section 2.6 is the responsibility of the Responsible Person and should be under Section 2.2 and not as a separate section. • Section 2.5 should be rewritten so that it starts <i>'The referrer must</i>' so that it is consistent with the other sections. <p>Section 2.2.3 (h). The requirement to <i>'arrange for any required medical services to be provided and for records to be kept'</i> is beyond the scope of this code and should be deleted.</p> <p>Section 2.2.9. This clause requires the Responsible Person to <i>'ensure that plans for buildings that are to incorporate dental radiographic facilities, including details of any shielding, are submitted to the regulatory authority before commissioning'</i>. As the NSW DEC has no such requirement, I suggest that the words <i>'where required by the Authority'</i> are included.</p> <p>Section 2.2.10(c). It is suggested that you delete <i>'higher than average doses received in similar departments and practices'</i> as the requirement to find out these levels seems unnecessarily onerous.</p> <p>Section 2.2.11 and Section 3.2.3. These sections refer to <i>'relevant dose constraints'</i>. Who is establishing these dose constraints? Once they are determined they will need to be stated in the Glossary.</p> <p>Section 2.3.1. It is agreed that staff involved in radiography must be provided personal monitoring, unless a radiation safety assessment demonstrates that doses are not significant and an exemption is granted by the Regulatory Authority. It is suggested that guidance be given on what should be done above and below a certain level. This guidance material should be incorporated in all codes of practice involving occupationally exposed persons.</p> <p>Section 3.2.2. This section must be reworded to refer to <i>RPS8 Code of Practice for the Exposure of Humans to Ionizing Radiation for Research Purposes (2005)</i> and the phrase <i>'and approval for a project must be obtained from the regulatory authority, where necessary'</i> deleted.</p> <p>Section 4.2.1. The phrase <i>'X-ray room'</i> suggests that dentists routinely have a</p>	<p>See above</p> <p>Agreed.</p> <p>These sections have been amended. It is not proposed to have a separate section on personal monitoring as dentists are often exempt from monitoring.</p> <p>Agreed</p> <p>Agreed</p> <p>Agreed</p> <p>RHC advice is to avoid such phrases</p> <p>Agreed</p> <p>To be established elsewhere, eg National Directory. There are mentioned here only for awareness raising.</p> <p>A definition will be included.</p> <p>For consideration by RHC for other codes.</p> <p>Agreed</p>
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	<p>designated room for X-ray procedures. It is suggested that <i>'dentist surgery or room where X-ray procedures are performed'</i> is inserted instead.</p> <p>Section 5.1.1. The requirement <i>'a record must be kept of all exposures made using digital equipment in the form of a hard copy of the image, a written diagnostic report or a computer record with appropriate back up'</i>, is considered unnecessary.</p> <p>Section 6.2.1 (b) (ii) and Section 6.7.1(d). It is suggested that after <i>'protective apron'</i> the phrase <i>'with a shielding value of not less than 0.3 mm lead equivalent at 150 kVp'</i> is added.</p> <p>Sections 6.6. In reference to <i>'Holding of Patients'</i> it is suggested that you consider a more inclusive explanation of who can hold or assist. While this is better explained in other areas of the document, many users of guides do not read the entire document and simply turn to their area of interest. I would therefore suggest the wording <i>'If parents or other persons of 18 years of age or older are called to assist, they should not be pregnant; and any person must be provided with...'</i></p> <p>Glossary. The definitions of Effective Dose and Equivalent Dose should be identical with those given in Annex B of <i>RPS1 Recommendations for Limiting Exposure to Ionizing Radiation (1995)</i>.</p> <p>Line 500. It is suggested that <i>'C/kg'</i> should be in brackets.</p> <p>Comments on draft Safety Guide</p> <p>For compatibility with other Radiation Protection Series publications, a new section called <i>'Section 1.1 Citation'</i> should be inserted with the following text: <i>'This Safety Guide may be cited as the Safety Guide for Radiation Protection in Dentistry (200x)'</i>.</p> <p>It is suggested that lines 955-957 are replaced with <i>'The Safety Guide provides additional explanatory material on certain aspects of the Code of Practice for Radiation Protection in Dentistry.'</i></p> <p>Section 3.3. This section should be rewritten in light of the publication <i>RPS8 Code of Practice for the Exposure of Humans to Ionizing Radiation for</i></p>	<p>Agreed.</p> <p>Agreed</p> <p>A record must be kept, however the emphasis has been changed to make the computer record the first option.</p> <p>It will be made consistent with the Australian Standard.</p> <p>Agreed</p> <p>Agreed</p> <p>Definition was deleted.</p> <p>Agreed</p> <p>Agreed</p> <p>Agreed</p>
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	<p><i>Research Purposes (2005).</i></p> <p>Section 6. This section needs to be edited with dentistry in mind. For instant reference to ‘<i>radiation procedures involving exposure to the lower abdomen and pelvic regions of woman of reproductive capacity</i>’ is irrelevant.</p> <p>Table 2, page 62. The quoted effective dose for a chest x-ray is for a PA (Posteroanterior) view only. The dose is substantially higher if a lateral view is performed as well. It is suggested that the wording under the table heading ‘Examination’ be changed to ‘Skull radiograph’ and ‘PA Chest radiograph’.</p>	<p>This is intended to be a general statement that leads into the next sentence on dentistry.</p> <p>Agreed.</p>
<p>18 Mr Peter Gardner Chief Executive Officer Dental Practice Board Victoria</p>	<p>I refer to your organisation’s draft code of practice for radiation protection in dentistry, which was discussed by the Board at a recent meeting.</p> <p>Generally speaking, the Board endorses and supports your document. However there is one area where it appears that unfamiliarity with the Victorian dental situation - specifically, the enhanced role of dental auxiliaries (hygienists and therapists) - has led to anomalous provisions.</p> <p>The draft code refers throughout exclusively to dentists as the persons responsible for the taking of radiographs. The one reference to dental auxiliaries categorises them as working under the direction of dentists in determining the need for radiographs. This will not work in the Victorian setting, where dental auxiliaries are permitted to make diagnoses, plan treatments and determine the need for radiographs. The Board recommends that the word ‘dentist’ be replaced with either ‘registered dental care provider’ or ‘dental care provider’.</p> <p>The range of duties that may lawfully be carried out by dental auxiliaries in Victoria is set out in their Code of Practice, a copy of which is enclosed.</p>	<p>Section 2.2 has been amended using words from the Dental practice Board’s Code of Practice. Several other references to “dentist and the dentist’s staff have also been amended.</p>