METRO COMMUNITY PROVIDER NETWORK

ALTURA PLAZA DENTAL CLINIC

RADIATION PROTECTION POLICIES

AND

PROCEDURES
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ALARA PROGRAM
FOR
ALTURA PLAZA DENTAL CLINIC

1. Management Commitment
   a. We, the management of the Metro Community Provider Network, Altura Plaza Dental Clinic are committed to the program described herein for keeping individual and collective doses As Low As is Reasonable Achievable (ALARA).
   b. We will perform a formal annual review of the ALARA considerations. This will include reviews of operating procedures and inspections.

2. Annual Review of Radiation Safety Program
   a. We will perform an annual review of the radiation safety program for adherence to ALARA concepts.

3. Quarterly Review of Occupational Exposures
   a. We will review, at least quarterly, the external radiation doses of workers.

4. Education Responsibilities for ALARA Program
   a. We will schedule briefings and educational sessions to inform workers of ALARA program efforts.

5. Reviewing Instances of Deviation from Good ALARA Practices
   a. We will investigate all known instances of deviation from good ALARA practices and, if possible, will determine the causes. When the cause is known, we will implement changes in the program to maintain doses ALARA.

6. Individuals Who Receive Occupational Radiation Doses
   a. Workers will be instructed in the ALARA concept and its relationship to work procedures and work conditions.
   b. Workers will be instructed in recourses available if they feel that ALARA is not being promoted on the job.
   c. Although it is unlikely that occupational workers in the Altura Plaza Dental Clinic will receive radiation exposures that will require investigation, we are establishing investigation levels of radiation exposure as described in paragraph 7.
7. Establishment of Investigational Levels in Order to Monitor Individual Occupational External Radiation Doses

a. This institution hereby establishes investigational levels for occupational external radiation doses which, when exceeded, will initiate review. The investigational levels that we have adopted are listed in Table 1. These levels apply to the exposure of individual workers.

b. The following actions will be taken at the investigational levels as stated in Table 1:

i. Personnel dose less than Investigational Level I
   No action will be taken in those cases where an individual's dose is less than Table I values for the Investigational Level I.

ii. Personnel dose equal to or greater than Investigational Level I, but less than Investigational Level II
   We will review the dose of each individual whose quarterly dose equals or exceeds Investigational Level I. If the dose does not equal or exceed Investigational Level I, no action related specifically to the exposure is required.

iii. Personnel dose equal to or greater than Investigational Level II
   We will investigate, in a timely manner, the causes of all personnel doses equaling or exceeding Investigational Level II and if warranted, will take action. A report of the investigation, any actions taken, and a copy of the individual's record form will be kept on file.

Table 1

<table>
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<tr>
<th>Investigational Levels</th>
<th>Investigational Levels (mSv per calendar quarter)</th>
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<tbody>
<tr>
<td></td>
<td>Level I</td>
</tr>
<tr>
<td>Whole body; head and trunk; active blood forming organs; gonads</td>
<td>1.25</td>
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<tr>
<td>Lens of eye</td>
<td>3.75</td>
</tr>
<tr>
<td>Hands and forearms; feet and ankles</td>
<td>12.50</td>
</tr>
<tr>
<td>Skin of whole body</td>
<td>12.50</td>
</tr>
</tbody>
</table>

8. I hereby certify that this institution has implemented the ALARA Program set forth above.

Signed: ______________________________________

Name Printed: _________________________________

Title: ________________________________________
EXTERNAL PERSONNEL RADIATION MONITORING

1. All personnel who are occupational exposed will be issued a radiation monitor (film badge). This radiation monitor is to be worn at the waist level and under any protective aprons that may be worn.

2. The Dental Director will promptly review all radiation exposure records when they are delivered by the contracted Dosometer monitoring service. Any unusual reported exposures will be noted and discussed with the personnel involved. If any reported exposure approaches the investigational levels described in paragraph 7 of the ALARA Program, they will be investigated as described in paragraph 7 of the ALARA Program.

3. Some personnel, such as secretarial support, housekeeping services, etc., may occasionally be exposed to radiation. These personnel are not considered occupationally exposed to radiation and will not be issued radiation monitors.
PROCEDURES FOR THE SAFE PERFORMANCE OF DENTAL RADIOGRAPHIC EXAMINATIONS

- NO RADIOGRAPHIC EXAMINATION WILL BE PERFORMED UNLESS IT IS ORDERED BY A DENTIST LICENSED TO PRACTICE DENTISTRY IN THE STATE OF COLORADO.

- NO RADIOGRAPHIC EXAMINATION WILL BE PERFORMED BY ANY PERSONNEL, WHO IS NOT AUTHORIZED TO PERFORM SUCH EXAMINATIONS BY THE COLORADO STATE DENTAL BOARD.

A. Diagnostic Radiographic Examinations

1. Intraoral Radiographic Examinations
   a. Radiographic exposures will not be made if the extension cone has been removed from the x-ray tube head.
   b. Intraoral film packets will not be held in place by either the patient or any other individual. Mechanical devices are available for this and will be used at all times.
   c. Patients will be shielded with lead or other suitable material protective aprons when radiographic exposures are made.
   d. All operators of intraoral radiographic equipment will remain at a distance of at least 6 feet from the unit when exposures are being made.

2. Panoramic and Extraoral Radiographic Examinations
   a. If practical, patients will be shielded by lead or other suitable protective aprons when radiographic exposures are made.
   b. The operator of the panoramic/extraoral x-ray machine shall remain at a distance of at least 6 feet from the unit when exposures are being made.
   c. Image receptors that will permit the least amount of radiation exposure while providing medically acceptable image will be utilized.

B. Radiographic Examination of Potentially Pregnant and Pregnant Patients

1. Intraoral, panoramic, and extraoral radiographic examinations that are medically indicated will be conducted in the normal manner. Patient protective shielding will be the same as outlined above in the “Procedures for the Safe Performance of Dental Radiographic Examinations”.
PURPOSE: To define the limitations on the occupational exposure to ionizing radiation of declared pregnant personnel and establish procedures to ensure adequate communication of associated risks and to minimize the exposure to the developing embryo-fetus.

POLICY: Upon a voluntary declaration of pregnancy the Director of Dental Services will review this policy with the employee and obtain signatures as indicated on the “Declaration of Pregnancy by Occupationally Exposed Personnel and Acknowledgement of Understanding” form. From a radiation protection perspective, there is no reason for an employee to discontinue working during her pregnancy.

Once a pregnancy has been declared, a total effective dose limit of 5 mSv for the pregnancy with a constraint that the effective dose limit in any given month not exceed 0.5 mSv shall apply to the occupational exposure received by the employee for the remainder of the pregnancy. If, by the time the employee declares her pregnancy, the dose to the embryo-fetus has exceeded 4.5 mSv, the dose to the fetus for the remainder of the pregnancy shall not exceed 0.5 mSv.

PROCEDURE:

1. Declaration of Pregnancy: At the option of the employee, she will declare her pregnancy and the estimated date of conception, in writing, to the Director of Dental Services by completing the “Declaration of Pregnancy by Occupationally Exposed Personnel and Acknowledgement of Understanding” form.

2. Estimation of Potential Occupational Exposure During Pregnancy: Upon receipt of a completed “Declaration of Pregnancy by Occupationally Exposed Personnel and Acknowledgement of Understanding” form, the Director of Dental Services shall review the employee’s personnel exposure monitoring history to determine prior exposure levels and estimate anticipated exposure levels for the remainder of pregnancy. This information will be provided to and reviewed with the employee.

3. Counseling Regarding Radiation Risks: Upon declaration of pregnancy, the employee will be provided with specific information regarding known risks to the embryo-fetus regarding exposure to ionizing radiation. Current radiobiological data indicate that the risks associated with in utero exposure are:
   a. A risk of severe mental retardation for radiation exposure between 8 and 15 weeks post-conception with a risk coefficient of 0.40 Gy\(^{-1}\) and with a threshold of between 0.1 Gy and 0.2 Gy.
   b. A lifetime risk of cancer of 0.1 Gy\(^{-1}\).

4. Monitoring of Occupational Exposure During Pregnancy: For the declared pregnant employee, the whole body badge is intended to provide and estimate of the dose to the embryo-fetus. Once a pregnancy has been declared, the employee’s whole body badge must be worn on the anterior aspect of the body at waist level and is to be worn under the lead apron when one is worn. The employee’s occupational exposure to ionizing radiation will be reviewed and documented on a monthly basis to insure that both the monthly effective dose limit of 0.5 mSv and total effective dose limit of 5 mSv are not exceeded.

Approved by:

Name: _______________________________________

Title: ________________________________________
DECLARATION OF PREGNANCY BY OCCUPATIONALLY EXPOSED PERSONNEL
AND ACKNOWLEDGEMENT OF UNDERSTANDING

Part 1: Declaration of Pregnancy

I, ____________________________ (SS#: _____ - _____ - _____) do hereby voluntarily declare that I am pregnant. The estimated date of conception for this pregnancy is ____________.

________________________________________  __________
Employee Signature     Date

Part 2: Acknowledgement of Understanding

I acknowledge that I have been informed of the risks to my embryo-fetus associated with my continued occupational exposure to ionizing radiation and that I have been instructed in the methods, which may be used to minimize my exposure.

I further acknowledge that my exposure history and an estimate of my potential exposure during my pregnancy, based on the results of personnel monitoring, has been provided to and reviewed with me. I understand that my actual exposure during my pregnancy will be closely monitored and documented and will be provided to me on a monthly basis.

I have read and understand the potential radiation risks to me and my unborn child, if any, if I work in such radiation areas, and fully assume such risks and hold harmless Metro Community Provider Network / Altura Plaza Dental Clinic from assumed risks. I understand and agree with the normal radiation safety procedures that the Metro Community Provider Network / Altura Plaza Dental Clinic has taken.

Given the information above, I elect to continue to work and to fulfill the responsibilities of my current position.

This acknowledgment does not imply a waiver of any right granted to me under Colorado Law and the Metro Community Provider Network / Altura Plaza Dental Clinic policies, rules and regulations.

________________________________________  __________
Employee Signature     Date

________________________________________  __________
Director of Dental Services Signature     Date
RISKS ASSOCIATED WITH OCCUPATIONAL EXPOSURE TO IONIZING RADIATION DURING PREGNANCY AND PROCEDURES FOR MINIMIZING EXPOSURE

Risks Associated with Occupational Exposure to Ionizing Radiation During Pregnancy

For pregnant personnel who are occupationally exposed to ionizing radiation, a total effective dose limit of 5 mSv has been established in order to minimize the potential exposure to the embryo-fetus once a pregnancy has been voluntarily declared in writing. Operational implementation of this limit restricts the monthly effective dose limit to 0.5 mSv.

At these levels of occupational exposure and at levels typically received by occupationally exposed individuals in the performance of diagnostic radiographic examinations, the risks to the embryo-fetus are believed to be quite small.

Current radiobiological data indicate that the risks associated with in utero exposure are:

1. A risk of severe mental retardation for radiation exposure between 8 and 15 weeks post-conception with a risk coefficient of $0.40 \text{ Gy}^{-1}$ and with a threshold of between 0.1 Gy and 0.2 Gy. The imposed effective dose limit of 5 mSv is at least twenty times less than the observed threshold and therefore this risk is believed to be negligible.

2. A lifetime risk of cancer of $0.1 \text{ Gy}^{-1}$. Based on the imposed effective dose limit of 5 mSv the estimated risk is 5 in ten thousand.

Minimizing Your Exposure to Ionizing Radiation

In order to ensure that the exposure to your embryo-fetus during your pregnancy is maintained at a level as low as reasonably achievable, the exposure recorded by your whole body badge will be used to provide an estimate of the dose to the embryo-fetus. Once a pregnancy has been declared, your whole body badge must be worn on the anterior aspect of the body at waist level and is to be worn under the lead apron when one is worn. Your exposure to ionizing radiation will be reviewed and documented on a monthly basis to insure that both the monthly effective dose limit of 0.5 mSv and total effective dose limit of 5 mSv are not exceeded. This information will be provided to you.

In order to reduce your exposure to ionizing radiation, you are expected to follow the “Procedures for the Safe Performance of Dental Radiographic Examinations”.

I have read and understand the above described potential radiation risks to me and my unborn child, if any, if I work in such radiation areas, and fully assume such risks and hold harmless Metro Community Provider Network / Altura Plaza Dental Clinic from assumed risks. I have also read, understand, and agree with the above described normal radiation safety procedures that the Metro Community Provider Network / Altura Plaza Dental Clinic has taken. I understand that my actual exposure during my pregnancy will be closely monitored and documented and will be provided to me on a monthly basis. I hereby agree to release Metro Community Provider Network / Altura Plaza Dental Clinic from any liability due to radiation exposure to which I have voluntarily exposed myself and any unborn child I may have in order to perform the duties of my job.

_______________________________________ __________
Employee Signature     Date

_______________________________________ __________
Director of Dental Services Signature   Date
Part 1: Estimation of Potential Exposure

Employee Name: _______________________________________

Employee Social Security Number: _______________________

Estimated Date of Conception: __________________________

Date of Declaration of Pregnancy: _______________________

Date of Inception of Personnel Monitoring: _________________

Number of Months from Conception to Inception of Personnel Monitoring: _________________

Cumulative Effective Dose, Indicated by Personnel Monitoring Records, since Date of Inception: 

Average Monthly Effective Dose: 

Estimated Total Effective Dose for Pregnancy: 

Part 2: Documentation of Actual Exposure Received During Pregnancy

<table>
<thead>
<tr>
<th>Monitoring Period</th>
<th>Dose for Monitoring Period (mSv)</th>
<th>Total Dose for Pregnancy (mSv)</th>
<th>Initials</th>
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Employee Signature __________________________ Date __________________________

Director of Dental Services Signature __________________________ Date __________________________
ANNUAL REVIEW OF RADIATION PROTECTION POLICIES AND PROCEDURES

Signed: ____________________________________________
Title: ______________________________________________
Date: ______________________________________________

Signed: ____________________________________________
Title: ______________________________________________
Date: ______________________________________________

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Signed: ____________________________________________
Title: ______________________________________________
Date: ______________________________________________
ACKNOWLEDGEMENT OF RADIATION PROTECTION POLICIES

I have read and understand the “RADIATION PROTECTION POLICIES” of Metro Community Provider Network / Altura Plaza Dental Clinic and I agree to abide by these policies. I also understand that any questions or concerns about these policies are to be directed to the Director of Dental Services.

Signed: ____________________________ Date: ________________

Signed: ____________________________ Date: ________________

Signed: ____________________________ Date: ________________

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APPENDIX A

ACKNOWLEDGEMENT OF RADIATION PROTECTION POLICIES

I have read and understand the “RADIATION PROTECTION POLICIES” of the Metro Community Provider Network / Altura Plaza Dental Clinic and I agree to abide by these policies. I also understand that any questions or concerns about these policies are to be directed to the Director of Dentistry.

Signed: ________________________________ Date: ________________

Signed: ________________________________ Date: ________________

Signed: ________________________________ Date: ________________

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