(a) Project work is governed by this Local Rules document.

(b) Safety arrangements for undergraduate teaching are summarised in Section 6.1 table 1 and section 8.2 of these Local Rules.

1. INTRODUCTION

1.1 Local Rules

The University of Sussex Local Rules for the Control and use of X-ray Equipment deals with all X-ray equipment, but is mainly targeted at the control and use of the equipment used for X-ray crystallography, X-ray diffraction and X-ray spectrometry.

Where X-ray equipment is to be used which does not fall into the above categories, advice must be sought from the University Safety Service.

The Local Rules for the Control and Use of X-ray Equipment should be regarded as an extension of the University's general Local Rules for work with radioactive materials and ionising radiation, document SSC-48-1, revised 2009, titled **'Local Rules for Working with Radioactive Materials and Ionising Radiation'**

SSC-48-1 should be consulted for regulations dealing with ionising radiation, where the equipment or materials involved do not fall within the Rules for the Control and use of X-ray Equipment.

1.2 Forward Planning and Structural Requirements

1.2.1 Any resiting of X-ray equipment, or bringing new X-ray equipment onto the University campus must only be undertaken in consultation with the School appointed Radiation expert and the University Safety Service.

1.2.2 If two X-ray sets are operated from a common control panel, it is vital that there must be a clear indication as to which set is being energised.

1.2.3 Each X-ray room or X-ray facility must be provided with a master switch (isolator) which can be operated in the event of an emergency within the facility.

1.3 Need to Obtain an X-ray Licence

All potential users of X-ray equipment (except undergraduates undertaking a one-off course work experiment) must obtain a University of Sussex X-ray Licence. These are obtainable from the University Safety Service. See section 8.3 for where the requirements for these licences apply

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2. RADIATION PROTECTION UNITS

2.1 Absorbed Dose

The unit of absorbed dose is the Gray (Gy). The energy absorbed at the exposure area for 1Gy = $1Jkg^{-1}$.

2.2 Dose

μ

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equipment. This should normally be provided by the supervisor but, where appropriate, may be given (by arrangement through the supervisor) either by an experienced research worker or an experienced technician.

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decide who may use the equipment, at what times

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8.1.2 Controls Engineering

8.1.2.1 Shielding

Local and total enclosures must be adequately shielded to < 5 μSv per hour at 8cm, i.e. 7-20 cps on Mini Monitor type 5.10X with GM tube ZP1481.

μ

μ

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excessive leakage or scattered radiation is detected the user should **immediately switch off the equipment** and seek advice from the Nominated Person or his representative, or the University Safety Service.

NB: Monitoring is especially important during lining up operations. (See Appendix B)

Users are reminded to monitor where they are likely to put their hands; to monitor eye-pieces **before** they use them and to monitor their working position.

Written safe systems of works for **undergraduates** must be provided in the Experimental Schedule/Laboratory Script document.

8.3 Administrative Controls for Use of X-Ray Equipment

8.3.1 Forward Planning and Structural Requirements

See the Introduction Section 1.2.

8.3.2 General Administrative Control Arrangements

8.3.2.1 Controlled Areas

To meet the requirements of the Ionising Radiations Regulations each X-ray enclosure has been designated a **CONTROLLED AREA.**

8.3.2.2 The Nominated Person

Each controlled area must be under the administrative control of a **NOMINATED PERSON.** The nominated person controls access to each controlled area, (i.e. the Nominated Person has overall control of the X-ray equipment.) He or she is **not** responsible for the **direct supervision** of workers who use the equipment, only for controlling

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.0182 Tc[be)]TJETQq0.00000912 0 612 792 reW* nBT/F3 11.04 Tf1 0 0 1 346.66 064.41 530 G[ )]TJETQq0.00000912 0 612

8.3.2.3 Safe Systems of Work

There are two distinct Safe Systems of Work:

First - the safe system termed **'Normal Use'.** This system, with the beam either fully enclosed or within an enclosure, is the 'preferred system'.

Persons who (with approval from the Nominated PersonU.6904 Tf1 0 0 1 252.05 66

μ

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within

Responsibility for supervision of each lining-up operation rests with the Nominated Person.

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saturate and read zero!

Formal checking of monitors will be undertaken from time to time by the University Safety Service.

11. EMERGENCY PROCEDURES

Fire - Operate fire alarm.

- If entry is needed to extinguish fire, fire-fighters are advised to go to the main isolator switch and switch this in the OFF position. They will then observe that the X-rays on warning lamps are no longer illuminated. Persons entering the area need not worry about any risk from ionising radiation. They should, however, be aware that other electrical components might still be live. It is safest to use CO_2 extinguishers on electrical equipment fires. If personal risk is foreseeable, the area should be evacuated and left for the attention of the to extinguish fire, fire

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APPENDIX C

BASIC RADIATION PROTECTION INFORMATION FOR UNDERGRADUATES

Ensure no part of person is placed in the beam - achieved by enclosure of beam.

Philosophy, radiation is easy to detect. It is low energy and

μ

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