

## Appendix 11. Risk assessment for laser use

The requirements for conducting and documenting risk assessments are described in STFC Safety Code 6 Risk Management. The recommended form to use for laser risk assessments is the STFC Quantitative Risk Assessment Form. Contractors may use their own format for risk assessments but they must meet the standards laid out in this code.

A risk assessment is required for all High Risk laser work, and for use of Low Risk category lasers on those exceptional occasions where the requirements of this Code as set out in Appendix 5 cannot be met.

The laser radiation hazard is unique: with its long range, the ease with which the hazard path can be redirected, its speed of impact and immediacy of injury and the severity of the injury to the eyes. Also unique is the wide range of control measures available to deal with the risk and the need to strike a balance between the restrictions of engineering controls with the flexibility of administrative controls.

Ideally, the risk assessment will specify the 'who and how' of potentially injurious situations, estimate of risk associated with each such situation and show how this leads to the choice of control measures, reflecting the preference of engineering and administrative controls over the use of safety eyewear. The standing orders will link in with the risk assessment i.e. where an engineering control is specified the SOs will specify a maintenance procedure for the control, where an administrative control is specified it will be also be present in the SOs and where eyewear is specified in the risk assessment then the SOs will include procedures for selection, storage and maintenance.

Following the recommendations in TR 60825-14: 2004 'A user's guide' this Code requires that the risk assessment determine the protective control measures necessary to ensure safe operation. In order to do this it is recommended that these control measures be disregarded in the initial listing of potentially injurious situations (see below), the first step of the assessment. By so doing, the control measures can be listed in step 2 and in step 3 these controls can (if appropriate) be marked as sufficient.

### A11.1 Risk assessment to establish or confirm control measures

#### A11.1.1. Step 1: What are the hazards?

A11.1.1.1 The risk assessment should list potentially injurious situations, disregarding those existing control measures. Hazards must include both beam and associated non-beam hazards; potential injurious situations must include but not necessarily be limited to:

- Normal operation (e.g. running the laser without major beam adjustment).
- Maintenance operations (including routine beam alignment).
- Service operations (e.g. major disruption and realignment).
- Emergency operations.
- Visitors present.
- External laser service engineers present.

A11.1.2. Step 2: Who might be harmed and how?

A11.1.2.1 Persons to consider in the context of each potentially injurious situation identified must include:

- Laser workers in the room and actively involved in the specific laser work under consideration (e.g. staff, contractors).
- Others in the room but not actively involved in the specific laser work under consideration (e.g. other activities in the room, visitors).
- Persons who could enter the laser area during laser operation *without terminating* the laser hazard (e.g. approved persons via interlock override; any person with a reason to enter if laser is not interlocked to the door).
- Persons outside the laser room who are at risk (e.g. when the room door is opened during laser activity) from laser radiation through a window or hole in the perimeter.

A11.1.2.2 The injuries to be considered must include eye or skin burns as a result of exposure to main or errant laser beam.

A11.1.3 Step 2: What are you already doing?

A11.1.3.1 For each potentially injurious situation with the assessed risk other than 'low' a list must be made of Engineering and administrative controls and the use of PPE, now including any controls previously disregarded as described in A11.1.1.1.

A11.1.4 Next Steps:

Then follow the STFC Code

When considering control measures in place or additional measures that could be put in place the 'best practice' as set out in Appendices 5 & 6 should be considered and where rejected the reasons why should be noted in the Risk Assessment.