

SAFE USE OF LASERS

LIGHT AMPLIFICATION BY STIMULATED EMISSION OF RADIATION

THE RADIATION PROTECTION AND NUCLEAR SCIENCE DEPARTMENT (RPNSD), WHICH IS PART OF THE NATIONAL ENVIRONMENT AGENCY (NEA), IS THE GOVERNING AUTHORITY FOR CONTROLLING LASERS IN SINGAPORE.

POSSESSION AND USE OF HIGH POWER LASERS (CLASS 3B AND 4) ARE TO APPLY FOR THE N2 AND N3 LICENCES WITH RPNSD. FOR N3 LICENCE, THE OPERATOR MUST BE AT LEAST 18 YEARS OLD AND THE LICENCE APPLICATION INCLUDES THE MEDICAL & EYE EXAMINATION.



THERE ARE VARIOUS TYPES OF LASERS OPERATING AT DIFFERENT WAVELENGTHS. DIRECT EXPOSURE TO HIGH POWER LASER BEAM CAN CAUSE VERY SERIOUS INJURY TO THE EYES AND SKIN. EXPOSURE TO BEAM REFLECTIONS MAY BE JUST AS DAMAGING AS EXPOSURE TO THE PRIMARY BEAM. HIGH POWER LASER CAN ALSO CAUSE FIRE THROUGH BURNING.

Laser Classes				
1	2	3A	3B	4



THE HIGHER THE CLASS OF THE LASER, THE MORE **HAZARDOUS** IT BECOMES

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WORKING WITH OPEN BEAM LASER SYSTEM HAS A HIGHER RISK THAN A CLOSED BEAM SYSTEM. THE SAFETY REQUIREMENTS TO OBSERVE INCLUDE:

- A. Possession of valid licences to operate any high-power lasers
- B. Have a proper risk assessment conducted
- C. Safety training for persons working on the laser (complete online NIR training modules)
- D. Warning sign to be pasted outside the entrance of the lab
- E. Control and authorize for entering the lab when the laser light is "ON"
- F. Use of laser curtains for the work area
- G. Basic safety rules in the lab such as removal of reflective items (watches or jewellery)
- H. Compulsory use of the correct type of laser protection eyewear (laser wavelength, optical density, visible light transmission (VLT) level, etc)
- I. Maintain good housekeeping in the lab to prevent tripping hazard as the room illumination may be reduced during laser works
- J. Procedure for doing laser alignment with the use of items such as mirrors, lenses, beam blocks, beam splitters, blocking stray deflected beam, etc. Where possible, start with low power for alignment work
- K. Extra safety measures when dealing with invisible beams, such as use of view finder, fluorescent card, thermal paper, camera, etc.



NOTE: DO NOT REMOVE THE LASER EYEWEAR DURING THE LASER WORK, EVEN IF IS ONLY FOR A SHORT MOMENT

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OTHER ADMINISTRATIVE MATTERS TO NOTE:

- A. Control and authorize on who can operate the laser in your lab
- B. Update the licences and authorized operator for your lab from time to time
- C. Select the correct laser eyewear suitable for your laser equipment
- D. Check and maintain the condition of the laser eyewear
- E. Switch off the laser and the room laser warning light upon completion of use
- F. Check with SPMS Safety for any query



LASER CAN CAUSE VERY SERIOUS HARM TO PEOPLE. NEVER POINT A LASER AT ANYONE, TO ANY MOTORIST ON THE ROAD OR AT ANY AIRCRAFT.