Standard COSHH Assessment

STANDARD COSHH ASSESSMENT *This form is only to be used after completing the COSHH flow chart in Appendix A.*	Ref. No:	Date:
	HY24-OXY01	01.01.2024

TASK / PROCESS / ACTIVITY/LOCATION:
What will be done? Where and when will this work be carried out?

The following COSHH is performed in order to assess the usage of gaseous Oxygen as a pre-charge ignition fuel for a student-built hybrid rocket engine project for flat-bed testing at the test site facility of Cranfield University.

PERSONS EXPOSED:

Staff	☒	Students	☒	Visitors	☐	Other (specify):

HAZARDOUS SUBSTANCES:
What will be used? What is the materials physical form?
(e.g. powder, dust, granular, liquid, solution, gas)

Oxygen – pressurized gas

STOCK QUANTITY: *What is the quantity of the stocksubstance container?*	PROCESS QUANTITY: *What is the quantity used in theprocess?*	FREQUENCY:	DURATION:
Oxygen: Type W tank (already outside TH11)	*10% margin considered* Oxygen: 0.6 litres	Process quantity used once per firing (3 planned hot firings)	Between 1--15 seconds per firing

HAZARD CLASSIFICATION:

Physical			Health			Environment
						
						
☐	☒	☒	☒	☐	☐	☐

ROUTES OF EXPOSURE:

Eye Contact	☒	Skin Contact	☒	Inhalation	☒	Ingestion	☒	Injection	☐

Specific storage requirements:
Consider chemical incompatibility, segregation, etc.

- Oxygen gas to be stored at 40 bars pressure.
- Store oxygen in a well-ventilated area away from combustible materials.
- Store cylinder in an upright position and secure them to prevent tipping.
- Ensure regular checking of the experimental and storage area for nitrous oxide concentrations.
- The surrounding temperature shall be maintained above 0 deg C with no moisture.
- Ensure adequate ventilation to prevent build-up of nitrous oxide vapours.
- Implement a system for monitoring personnel exposure levels, especially in confined spaces.
- Storage shall maintain dry ambient atmosphere around the cylinders.
- Valve operation shall avoid any abrupt closure or opening, eliminating any chance of shock propagation through the feed line (Needle valve implementation).
- All personnel shall be trained in for containment breach plan and evacuation emergency procedure.

PERSONAL PROTECTIVE EQUIPMENT (PPE):						
						
☒	☐	☒	☒	☐	☐	☐

For every item of PPE required, specify the type and other relevant information below:	
Type	**Other relevant information** *(e.g material, level of protection, etc.)*
Eye protection	Eye goggles required at minimum, if possible face masks should be worn when handling highly pressurized gases.
Clothing	Long sleeved clothing should be worn when handling pressurized gases. Shorts should not be worn.
Gloves	Use nylon gloves while operating manual valves of the gas cylinder, and during storage.

Are additional controls required?	**No** ☒ **Yes** ☐ If yes, complete RAMP (Appendix D).

EMERGENCY PRECAUTIONS	
Eyes:	Remove contact lenses if any, rinse eyes with warm water for at least 15 minutes, seek medical attention.
Inhalation:	Remove the affected from contaminated area immediately and move to fresh air. If breathing difficulties persists, seek medical attention.
Skin:	Remove any contaminated clothing. Remove the affected from the contaminated area. Immediately submerse the affected body part in warm water, soak it in for at least 10 minutes. If irritation persist, seek medical attention.
Ingestion:	Remove the affected immediately from the contaminated area. Immediately seek medical attention.
Spill:	N/A
Fire:	Oxygen enrichment, leakage or explosion may lead to fire. Extinguish using water or CO_2

Risk Rating Severity of potential harm x Likelihood of exposure = Total	**S**[8]	**L**[9]	**Total**[10]
	3	**3**	**9** **(Moderate Risk)**

AUTHORISATION			
Assessor:	Triyan Pal Arora	Date:	01.01.2024
Reviewer:	Dr. Eduardo Pan Anselmi	Date:	
Reviewer:	Rosemary Burns	Date:	
Reviewer:	Scott Booden	Date:	
Authoriser:	Dr. Vassillios Pachidis	Date:	

8. See Appendix G for severity definitions and scoring. Severity should be based on information including the worst case illness.
9. See Appendix G for likelihood definitions and scoring. Likelihood should be based on how likely ill health is to occur. Good existing controls will reduce the likelihood.
10. The total existing risk rating is determined by Severity x Likelihood. See Appendix H.