Safe Job Analysis (SJA)

SJA title: High pressure fluid measurements	**Project no:** Generic	**Project title:** Generic	
Project manager: Kjetil Folgerø	**Responsible for SJA:** Anna Mathea Skar	**Participants in the SJA:** Anna Mathea Skar, Kjetil Folgerø	
Short work description Use of pressure vessel to test permittivity of non-flammable fluids		**Premises:** NORCE Bergen	

No.	Task	Possible danger	Possible consequence	Recommended action
1	Hydrostatic pressure test of measurement cell	• Deformation of equipment that cannot withstand the pressure • Water leakage	• Impact damage to personnel or equipment • Damage to electrical equipment and personnel	• Follow the order of procedure (attached) and checklist (below) • Use mechanical separation between operator and measuring cell • Use safety glasses • Carry out experiments during working hours and under the supervision of a laboratory supervisor who has sufficient training for the equipment • Ensure communication with the project team, laboratory users and those affected nearby before start (and when finished) • Check that all connections to the measuring cell are securely fastened • Consider whether the measuring cell and cables should be permanently installed • Interrupt measurement in the event of a major water leak. Have fire safety equipment available • Follow a gradual pressure build-up and continuous check of the pressure gauge • Release the pressure before removing the mechanical separator • Do not put your head over the lid when opening the cylinder • Choose measures to avoid exposure to hazards, i.e. ensure that the working environment is suitable, e.g. work room, ventilation, first aid equipment

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2	Initial installation	• Gas leakage may occur • High pressure produces large forces that can destroy equipment	• Health damage to personnel by inhaling gas • Impact damage to personnel or equipment	• Follow procedure and checklist • Ensure that the operator has sufficient training/knowledge • Follow the emergency shutdown procedure (below) in case of leakage or other unwanted incidents • Consider the use of mechanical separation between operator and measuring cell • Use safety glasses • Ensure communication with the project team, laboratory users and any others affected before start (and when finished) • Check that all connections to the measuring cell are securely fastened • Make sure that the gas outlet is discharged into a fume hood • Consider whether the measuring cell should be placed under extraction • Consider whether the measuring cell and cables should be fixed
3	Gas testing	• Gas leak • Deformation of equipment	• Health damage to personnel by inhaling gas • Impact damage to personnel or equipment	• Follow procedure and checklist • Ensure that the operator has sufficient training/knowledge • Follow the emergency shutdown procedure (below) in case of leakage or other unwanted incidents • Use safety glasses • Clear sign "gas under pressure" • Consider how high a pressure is necessary for the gas being measured. A goal should be to use as low a pressure as possible • If the gas leak is out of control, leave the laboratory and notify the room manager. • In case of serious personal injury, call 113 and the NORCE emergency number (21 08 01 86)
4	Disconnection	• Gas leak • Deformation of equipment	• Health damage to personnel by inhaling gas • Impact damage to personnel or equipment	• Follow procedure and checklist • Use safety glasses • Ensure communication with the project team, laboratory users and any others affected when finished • Release the pressure and ensure that the pressure has dropped to atmospheric pressure before removing the mechanical separation between operator and measuring cell

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Check list:

	Yes	No	Comments
Have you informed the room manager and the person in charge of emergency response for the laboratory?			**Inform room manager well in advance of the start of the experiment. Also inform when the experiment is finished**
Will the experiment be done under supervision?			**Consider supervision at high pressures and if there is a lack of sufficient training and experience with the equipment used**
Are the fluid(s) explosive?			**Follow a different/create new SJA and always conduct experiments with supervision**
Are the fluid(s) health hazardous?			**Be careful using gas exhaust hoods during gas emissions. Use a laboratory room with adequate ventilation**
Should the fluid(s) be pressurized?			**Follow the procedure and be careful with the order of procedure**
Is the gas from the measuring cell released into the exhaust before the chamber is opened or the seperator is removed?			**Check that the pressure sensor has returned to atmospheric pressure**

Emergency shutdown procedure:

1. If the gas leak is out of control, leave the laboratory and notify the room manager.
2. In case of serious personal injury, call 113 and the NORCE emergency number: 21 08 01 86