UNIVERSITY OF BATH HEALTH AND SAFETY STANDARD

Unattended Experiments

Version Number	Version 3	Date of Approval	September 2024	Review Date	Three years from acceptance by UHSC
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Aims	The University is committed to ensuring the health, safety and welfare of all staff, students, and visitors. To achieve this the University aims to take effective measures to manage hazardous activities by undertaking suitable and sufficient assessments of the risk created by work activities that have the potential to affect the health of those employees; and implement steps to eliminate or reduce the risk identified in the assessment. One such step is ensuring that necessary H&S information is readily available if an incident were to occur.				
Scope	This standard applies to all experiments conducted in University laboratories within high risk departments. This guidance applies to: • Apparatus and rigs but not proprietary items such as refrigerators, drying ovens, spectrometers etc. unless they are "live" contain/connected to gases/hazardous materials • Use of apparatus outside normal working hours including overnight weekends and holidays. • Those wishing to leave apparatus unattended, including research students, their supervisors, academics, technicians etc.				
Relevant Legislation	• Health & Safety at Work etc. Act 1974 (HASWA) • The Management of Health & Safety at Work Regulations 1999 (MHSWR) • Control of Substances Hazardous to Health Regulations 2002 (COSHH)				
Definitions	Unattended Experiment A laboratory experiment which is left without supervision (person knowledgeable about experiment is not present within the laboratory) for a significant period of time; >2hours.				
	Operational Form A form containing all required information to make safe an unattended/overnight experiment in the event of an incident. This should be attached to the equipment/fume cupboard/Lab door and be up to date.				
	Responsible Person The person who has setup the experiment and is responsible for its safe setup, operation, and shutdown.				
Responsibility for implementation	Heads of Departments Technical Managers Supervisors/Managers/Principal Investigators Responsible Person				
Training availability:	Induction Training by Supervisors/Area Safety Co-ordinators/Technical staff Departmental Handbook read and signed as understood by all employees				

	Standard to meet:	**Accountability**	**Reference documents and more information**
1.	Include in department H&S arrangements the requirement to place Operational Forms on equipment (including fume cupboards etc.) when experiments are left unattended (as defined above).	Head of Department	
2.	Ensure the requirement for operational forms is communicated to all relevant persons within area of responsibility.	Head of Department	This may be included in the departmental handbook and/or induction training
3.	Ensure laboratory risk assessments identify when unattended experiments are to be carried out and include the need for an operational form as a control measure.	Supervisors/ Managers/PIs	Guidance for Risk Assessments can be found at the end of this standard
4.	The Operational Form must contain the following information as a minimum:	Responsible Person	An example template is included in the standard;

	• Name and contact details of responsible person/s • Main hazards of experiment • Instructions for safe shutdown of experiment (these should provide sufficient information for any person to safely shutdown the experiment) • Supervisor Permission		however, this format does not need to be used as long as the minimum information is present.
5.	Ensure unattended experiment forms are placed on/close by equipment/fume cupboards/lab doors where required and that they remain up to date (remove old copies promptly). Ensure it is clear what needs to be operated if there are multiple plugs for example.	Responsible Person	Pictures can be added to provide clear guidance on what should or should not be operated/switched off
6	Ensure emergency procedures are in place and provide clear instructions to respond to any alarms that may sound when users are not in attendance.	Responsible Person	

OPERATIONAL FORM

This form applies to ALL operational experiments that are to be left unattended/unsupervised. It MUST be displayed prominently, as close as possible, to the operation to which it applies. A Risk Assessment (RA) must also be completed. This form is for academics, PhD students, postdocs, technicians and visiting researchers. IT IS NOT TO BE USED BY UNDERGRADUATES.

OPERATIONAL INFORMATION

CONTACT DETAILS	Name	Telephone No.	Email
Primary User			
Secondary User			
Supervisor			

EXPERIMENTAL DETAILS (Include Hazards)

PERIOD OF OPERATION

Start Time		End Time	
Start Date		End Date	

Note: ***If the experiment is modified or the procedure changed, a new form and RA must be completed (remove old copies)***

EMERGENCY SHUTDOWN PROCEDURE

The experiment should be capable of being safely shutdown in 3 clear steps. In event of discovering fault condition, follow these steps, clear area, and contact appropriate persons.

1.
2.
3.

SUPERVISOR PERMISSION	Yes	No	Supervisor Signature and Date
Risk Assessment Complete			
Permission to run experiment			
Permission to work out of hours*			

**define out of hours*

Risk Assessment Guidance:

The following is a list of items specifically related to unattended experiments that should be considered when producing risk assessments. These are in addition to the general considerations of the task itself and the list is not exhaustive.

Although best avoided wherever possible, it is recognised that certain experimental work may require that various operations run unattended for periods of time, including overnight. A key principle is to design a system of work that ensures any failure of the equipment or services in use results in the apparatus shutting down safely (fail-to-safety mode). The following points must be considered when preparing experiments that will be left unattended:

The failure of equipment or services should result in a safe shut down, i.e., equipment should be designed to fail to a safe condition. This may mean failsafe devices are fitted which guard against the failure of services e.g., water, electricity, or gas supplies.

Procedures for isolating services safely should be described in the operational form attached to the equipment (so that isolation can be carried out safely, if necessary, by Security or emergency services). This could include shutting off gas cylinders valves. Tools to enable the shutdown should be clearly available and identified.

The effect of an adverse event on other experiments / equipment in the vicinity should be considered, which could lead to additional or different risks.

The equipment should be observed for at least one hour under the exact conditions under which it will run before being left unattended.

Stocks of hazardous materials not actually in use should be either removed from the area where the work is to take place or kept within proper stores/cabinets in the area. This especially applies to flammables, gas cylinders and hazardous chemicals.

All electrical wiring must be sound, with no bare wires, and plugs fused at the correct rating.

Waste outlets should be checked at regular intervals to ensure they are clear of obstruction (frequency of checks will depend on the circumstances, and this should be stated in the risk assessment).

Water-cooling hoses must be sound new rubber or plastic, preferably reinforced, and wired securely to the apparatus, and to the tap, unless permanently plumbed in. Precautions should be taken to see that any cooling water flow does not stop or change. Avoid leaving water running unattended if not required, to reduce the risk of flooding.

Gas heating is not permitted. Any heating must be electrical. If a heating bath is used it must be a graphite bath or silicone oil bath (not liquid paraffin), in order to reduce the risk of fire.

All supports must be firm and securely fitted.

Any gas cylinders used must be securely clamped individually to the bench or to a stand. Proper arrangements must be made to see that the gas flow remains constant, and that waste gas is properly trapped or exhausted safely.

Any vacuum required must be supplied from a rotary vacuum pump. The use of water pumps is not permitted, nor should the Departmental vacuum supply be used.

Chemical reactions must be housed in a fume cupboard if possible.

For experiments where a large amount of heat may be generated, potentially producing a risk of ignition, it should always be ensured that adequate precautions are taken to cool such apparatus for the entire time period.

Centrifuges and vacuum pumps are often left running for lengthy periods. Workers must ensure that such apparatus is in good working order (adequate coolant and/or oil present) before using them.

Samples left in centrifuges, vacuum evaporators, chromatography systems, scintillation counters, etc. must be clearly labelled so their content and owner is known to any other worker who may encounter them.

Arrangements must be made for regularly checking that the equipment is still operating safely over weekends, or during holiday periods when the University is shut down.