

Risk Assessment: General Use of High-Temperature Furnaces

Hazard	Who Might be Harmed and How?	Existing Control Measures	Further Actions Required	Responsible Person	Date
Burns	<p><i>Research staff and students. Contractors or Estates personnel requiring access to research spaces.</i></p> <p>Direct contact with furnaces or samples at high temperature could result in severe burns.</p> <p>Radiation burns when furnaces are in operation at temperatures in excess of 1100 °C.</p>	<p>Signage is used to warn personnel of burn risks associated with hot samples removed from furnaces</p> <p>Users wear heat resistant gloves when adding / removing samples from furnaces at high temperature.</p> <p>Long tongs are used when adding / removing samples from furnaces to reduce the risk of direct contact with hot surfaces.</p> <p>Closed-toe footwear is worn to help prevent burns if samples / crucibles are accidentally dropped.</p> <p>If furnace temperatures are above 1100 °C, UV glasses are worn to protect eyes from harmful radiation.</p>	No further actions required at present, but risk assessment subject to regular review.	N.A.	N.A.

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Fire	<i>All building users</i> Materials heated above their autoignition temperature could result in a fire.	Material compatibility is assessed during experimental risk assessment. Samples are monitored during initial heating phase so adverse reactions can be identified and emergency actions taken.	No further actions required at present, but risk assessment subject to regular review.	N.A.	N.A.

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Exposure to corrosive, irritant or toxic gases	<i>Research staff, students and Estates personnel</i> If a sample liberates a corrosive, irritant or toxic gas when heated, inhalation of the gas / vapour could cause harm.	Risk of chemical release is assessed during experimental risk assessment and, wherever possible, samples with the potential to liberate hazardous vapours / gases are not heated in furnaces. If liberation of hazardous gases / vapours is reasonably foreseeable and unavoidable, the furnace should be positioned under an extraction canopy or a "chemical trap" should be used to capture and contain harmful gases as outlined by experimental risk assessment. Samples are recorded in a log-book at room entrance for reference in the event of an emergency / unexpected release.	No further actions required at present, but risk assessment subject to regular review.	N.A.	N.A.

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Electrical Shocks	<p><i>Personnel working with furnaces and carrying out maintenance operations.</i></p> <p>Direct contact with live electrical components during maintenance could result in electrical shocks.</p> <p>Touching tongs to elements when adding / removing samples could result in an electrical shock if element is live.</p>	<p>Furnaces are regularly inspected to ensure good working order. If damaged cables are identified, equipment will be isolated and not used until repairs are completed.</p> <p>Repairs are carried out by a competent electrician.</p> <p>Safe system of work for maintenance tasks outlines furnace must be disconnected from mains supply before work commences.</p> <p>If a furnace is hardwired to an electrical connection (i.e. appliance is not simply connected to a mains electrical supply), an Estates electrician must isolate electrical power or physically disconnect before any maintenance work is carried out.</p> <p>Furnaces are equipped with interlocks; furnace elements are not live when furnace doors are open and eliminating the risk of shock.</p>	No further actions required at present, but risk assessment subject to regular review.	N.A.	N.A.

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Physical	<i>Personnel working with furnaces</i> Hands / fingers could become trapped in furnace opening / closing mechanisms and cause injury.	Personnel using furnaces are trained by laboratory supervisors / technicians and warned of physical hazards.	No further actions required at present, but risk assessment subject to regular review.	N.A.	N.A.

Training Requirements:

Researchers using high-temperature furnaces will receive training at an individual research group level.

Specialised Emergency Response (if required):

Release of Gas: In the event of a release of toxic or corrosive gas, heating should be stopped, if safe to do so, and personnel should evacuate to a safe area. In the event of a major release of toxic gas, the fire alarm should be triggered and the building evacuated.

Fire: If a fire develops with a furnace, heating should be stopped and attempt to extinguish the fire, if safe to do so. In the event of a major fire, the fire alarm should be triggered and the building evacuated.

Version Control

Version Number	Purpose or Changes	Document Status	Author of Changes, Role and School/ Unit	Date
1.0	Original Document	Published	Kevin Jones, Chemistry	27/06/2025
1.1	Updated with emergency and training sections	Published	Kevin Jones, Chemistry	27/10/2025