

lechyd a Diogelwch – Health and Safety

LABORATORY SAFETY – SAFE USE OF MICROWAVES

This Information Sheet provides guidance on using microwaves safely in a laboratory environment.

Microwave Hazards

Using microwaves in a laboratory is very similar to using microwaves at home as:

- You have to be careful of hazards created during heating eg steam.
- Not everything can be microwaved! This is especially the case when microwaving substances which can react and become volatile when heated.



In addition, you must also be careful of:

- Leaking microwaves.
- Burns from vessels (used to contain substances) and substances that become hot.
- Steam from substances or substances expanding and bubbling over.
- Using unsuitable containers that lose their strength and then fail when handled.
- Using dirty containers that contain residues of another substance that react with your substance, causing an exothermic reaction.
- Reactions after heating eg placing a cold metal object in a boiling substance may cause an ejection of hot liquid.
- Confusing signals ie the container may be cold but the substance inside may be very hot.
- Toxic vapours from hot substances.



Items explode



Some substances should not be microwaved as they explode



Steam

Using Microwaves Safely

Following the steps below should ensure your health and safety when microwaving items in a laboratory environment:

- **ALWAYS** refer to the COSHH and Risk Assessments before heating any substance.
- **NEVER** microwave flammable or toxic materials.



- **BE VERY CAREFUL** when microwaving water – the water may not appear to be boiling but can explode when removed from the microwave.
- Use suitable (non metallic), heat resistant containers.
- Never overfill containers.
- Use a suitable stopper⁽²⁾ that stops bubbling over but also stops a build up of pressure.
- Allow items to cool for **at least 30 seconds**⁽³⁾ before removing them.
- Wear heat resistant gauntlets⁽¹⁾ when removing items, keeping your lab coat sleeves tucked into the gauntlet so you don't get steam up your sleeve!
- Point containers away from yourself and others⁽⁴⁾ when removing from the microwave.
- Handle the container / substance carefully. If you think it is *'too hot to handle'* wait for it to cool a bit more.

1



2



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Wait at least **30** secs



4



FINALLY:

- If materials inside the oven should ignite, **KEEP THE OVEN DOOR CLOSED**, turn the oven off, disconnect the power cord and follow Fire Emergency Procedures.



- If you think there is something wrong with the microwave, **STOP** using it, place a sign on it to ensure others don't use it and report it immediately to your Supervisor / Line Manager.
- **NEVER** use laboratory microwaves to heat your lunch!