

# GENERAL RISK ASSESSMENT FORM

Faculty/Directorate

FACH (Greenwich Maths Centre)

Title of risk assessment/work being assessed

Walking on Custard activity at the Festival of Mathematics and its Applications

Location of work being assessed (Campus, building, room)

Queen Anne Courtyard

Date of assessment

19 June 2017

## Brief description of work being assessed

Include brief details of stages of the process, numbers of people involved, scale of operation, duration, timing and frequency of work (attach protocol or method if preferred)

The activity leader (Dr T Reis) has carried out this activity many times before, with children at Butlins and with University visitors at his previous University. He has undergone a DBS check. Participants will run across a shallow bath (approximately 15cm deep) of custard – a mix of cornflour and water. The extreme shear thickening properties of this fluid means its viscosity, or “thickness”, increases drastically when a force is applied to it. This enables one to run on the surface of the fluid without sinking. This is a practical demonstration of fluid dynamics and viscosity.

Set-up involves mixing the cornflour and water in buckets with plaster-mixing tools and transferring the solution to the bath. Each bucket will hold 20 litres of custard. Four people will be involved in this stage. The mixing tools are battery operated and will be fully charged before the mixing process begins and spare batteries will be on-site.

Participants will take it in turns to run across the mixture. One person at a time is allowed to try the activity. The bath and participant will be supervised by at least three people at all times: one staff member at each side of the bath and one at the end. The number of runs each person can have will be limited. Due to the shear thickening properties of the fluid, it gets harder as it is hit harder, thus meaning there is very little splashing.

Disposal of the custard will be discussed with Facilities Management and the Risk Assessment updated accordingly. Options could involve diluting the mixture to a liquid state and tipping it down the drain, or bagging for disposal in bins, or a combination of these.

## Things to consider within the assessment – this list may not be exhaustive

- **Personal safety** e.g. Physical or verbal attack; disability or health problems; delayed access to personal or medical assistance; failure of routine or emergency communications; security of accommodation and support; getting lost, or stranded by transport; cultural or legal differences - List aspects of the work with significant hazards, and give brief details of how foreseeable harm/injuries could occur

- **Equipment hazards - Storage, handling and use of equipment and materials** e.g. Tools; machinery; vehicles; manual handling; noise; work at height; electricity; fire; vacuum; high pressure; high temperature; ultra violet; laser; vibration - List equipment and materials with significant hazards, and give brief details of how foreseeable harm/injuries could occur
- **Biological hazards - Storage, handling, use, and disposal of biological agents, intermediates, products and waste, "any micro-organism, cell culture or human endoparasite including any which have been genetically modified, which may cause infection, allergy, toxicity and other hazards to human health". This includes bacteria, viruses, fungi and parasites. Include routes of exposure** e.g. Blood borne infection; skin contact, skin sensitisation; sensitisation by inhalation; toxic by ingestion or inhalation. List biological agents with significant hazards, and give brief details of hazard classification and foreseeable harm/injuries
- **Natural physical hazards - Effects of the natural environment, climate, landscape, plants, animals** e.g. Extreme weather; earthquakes and volcanoes; mountains, cliffs and rock falls; glaciers, crevasses and icefalls; caves, mines and quarries; forests including fire; marshes and quicksand; fresh or seawater, tidal surges
- **Environmental impact** e.g. Pollution and waste, deposition of rubbish, disturbance of eco-systems, trampling, harm to animals or plants
- **Chemical hazards - Storage, handling, use, and disposal of chemical reagents, intermediates, products and waste** e.g. Toxic by inhalation or ingestion; irritant; corrosive, flammable; explosive; oxidising; radioactive. Include routes of exposure e.g. skin contact; skin sensitisation; sensitisation by inhalation; toxic by ingestion or inhalation. ***If the chemical is a group 3 or 4 chemical (see RA guidance sheet) then a separate COSHH assessment MUST be carried out.***

## Risk Assessment:

Description of Hazard <small>(only include significant hazards inherent within the task or the activity)</small>	Person(s) at risk <small>e.g. staff, students, visitors, new &amp; expectant mothers etc.</small>	Current control measures in place	Current risk rating			Further control measures required and by whom <small>(usually only necessary where the risk rating is either high or medium)</small>	Final risk rating		
			Likelihood	Severity	Risk Rating		Likelihood	Severity	Risk Rating
Trips and slips	All participants	<p>Activity to be supervised by at least three people at all times.</p> <p>Participants to be held or supported by staff (eg hold hands) while they run across the custard.</p> <p>Running around the activity area banned.</p> <p>Area around the bath of custard to be kept dry and free from obstacles at all times. Activity will be paused for cleaning/drying as required.</p> <p>No-slip bath mats will surround the pool.</p>	3	2	6	<p>Document to be produced to brief participants of the dangers and how to minimise them.</p> <p>Physical contact (ie holding hands) will only be made with the consent of the participant.</p> <p>T. Reis to have the contact number of an on-site first aider</p>	3	2	6
Injury due to bare feet on gravelled floor	All participants	A larger paddling pool, towels, and bath mats will cover the floor area	3	2	6	T. Reis to have the contact number of an on-site first aider	1	2	2
Allergic reaction	All participants	Advice given on chemical structure of cornflour mix.	1	3	3		1	3	3
Electrical hazards (Mixing equipment)	Staff	Only designated staff who have been shown how to use the equipment will do the mixing.	2	2	4	No members of the public will be allowed near while mixing is taking place.	2	2	4
Spread of infection through common use of cornflour mix	All participants	All participants will be warned before engaging in the activity. Nobody with a foot infection will be allowed to participate.	3	1	3	Schools to be contacted to advice their students that anyone with foot infections will not be	3	1	3

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			Likelihood	Severity	Risk Rating		Likelihood	Severity	Risk Rating
						allowed to participate in the activity.			
Lifting injury	Staff	All staff should have had University training in lifting heavy weights. Limited lifting will be required (mainly buckets of water and bags of cornflour). Student helpers will be instructed to leave any heavy lifting to members of staff.	1	1	1	T. Reis to have the contact number of an on-site first aider	1	1	1
Crowding	Visitors	Number of visitors surrounding the activity to be restricted. Nobody other than staff and the current participant to be allowed within 1.5 metres of the bath.	2	2	4				
Slipping/sinking on custard due to inconsistent mixing	All participants	Custard to be well mixed with professional standard equipment. T. Reis to check consistency.	1	2	2				
Tripping when getting into bath of custard	All participants	Staff to give instructions and safety advice to participants. Staff will assist participants at the entrance	2	2	4	T. Reis to have the contact number of an on-site first aider			
Tripping when getting out of bath	All participants	Staff to be present to assist at the end of bath	2	2	2	T. Reis to have the contact number of an on-site first aider			
Sunstroke and dehydration	All participants	Water point to be provided outside QA063.	2	1	2	T. Reis to have the contact number of an on-site first aider.			
Risk of getting wet in a sudden storm	All participants	Gazebo to be provided by catering team. Activity will not run if rain is too heavy.	2	1	2				

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Dirty clothes from falling in custard	All participants	Everyone will be briefed and warned in advance. Shoes and socks must be removed before walking on custard and trousers/longs skirts must be rolled up to the knees.	2	1	2	Schools to be contacted with advice on what their pupils of appropriate clothing. Other participants to be advised on-site of the risk of getting messy.	2	1	2
Issues regarding water supply / hose	Staff	To be discussed with Facilities Management	1	1	1				
Issues around disposal	Staff	Custard will be bagged and binned at the end of each day. Supply of suitable bins to be discussed with Facilities Management	1	1	1				
Need to wash feet after running across the custard	All participants	Buckets of water to be placed at the end of the bath from washing feet. Light disinfectant added to water to kill bacteria.  Paper towels to be supplied to dry feet.	3	1	3				
Disposal of paper towels	Staff	To be discussed with Facilities Management	1	1	1				
Theft of shoes and socks	All participants	Staff and student helpers to monitor possessions. Possessions left at owners own risk.	2	2	4				
Storage of cornflour prior to mixing.	Staff	To be discussed	1	1	1				
Damage to courtyard and university buildings due to	Campus	Feet must be washed thoroughly after	4	2	8				

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			Likelihood	Severity	Risk Rating		Likelihood	Severity	Risk Rating
custard spillage and dirty feet/clothing		<p>participation. People with custard-covered clothes will be prohibited from entering university buildings.</p> <p>Large paddling pool (5m x 2m) ordered to contain custard and cover courtyard.</p>							

**Person(s) completing this assessment:**

(Person carrying out or managing the activity day-to-day)

Name ..... Title ..... Signature ..... Date .....

**Other person(s) commenting on this assessment (where required under Faculty/Directorate arrangements)**

(Line Manager or Supervisor responsible for the activity, others involved in the decision-making process, others advising on the activity eg Health & Safety Manager, Health & Safety Local Officer)

Name ..... Title ..... Signature ..... Date .....

**Person approving this assessment:**

(Person with overall responsibility for the activity e.g. Faculty Operating Officer/Director of Professional Service, Senior Academic or Manager)

Name ..... Title ..... Signature ..... Date .....

**Review of assessment, and revision if necessary**

(For continuing work: the assessment must be reviewed for each visit in a series; when there are significant changes to work materials, equipment, methods, location or people involved; and if there are accidents, near misses or complaints associated with the work. If none of these apply, the assessment must be reviewed at least annually)

REVIEW DATE	--/--/----	--/--/----	--/--/----	--/--/----
Name of reviewer				
Signature				
No revisions made				
Changes to activity, hazards, precautions or risks noted in text.				

Appendix 1 – Risk Matrix

The hazards identified within the risk assessment should be assigned a risk rating – this should be assigned for any control measures which are currently in place and any further control measures which will be required.

You should assign a value for the likelihood of an incident occurring based on the hazard from 1 to 5 and a value for the severity / impact of the hazard from 1 to 5. These should then be multiplied together to give a final risk rating e.g. 3 x 2 = 6.

<b>IMPACT</b>	<b>5</b> CATASTROPHIC	<b>5</b>	<b>10</b>	<b>15</b>	<b>20</b>	<b>25</b>
	<b>4</b> MAJOR	<b>4</b>	<b>8</b>	<b>12</b>	<b>16</b>	<b>20</b>
	<b>3</b> SERIOUS	<b>3</b>	<b>6</b>	<b>9</b>	<b>12</b>	<b>15</b>
	<b>2</b> MODERATE	<b>2</b>	<b>4</b>	<b>6</b>	<b>8</b>	<b>10</b>
	<b>1</b> MINOR	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
		<b>1</b> RARE	<b>2</b> UNLIKELY	<b>3</b> POSSIBLE	<b>4</b> LIKELY	<b>5</b> ALMOST CERTAIN
<b>LIKELIHOOD</b>						

<b>Risk score = likelihood of the hazard to cause harm x impact</b>		
<b>High</b>	<b>Medium</b>	<b>Low</b>
<b>Rating 15 or more</b> Immediate action is required to control and/or lower the level of risk. Exposure to the identified hazard is prohibited or severely restricted.	<b>Rating 8 - 12</b> Urgent review of the equipment, activities, system of work within the workplace with the aim of lowering the risk to the next level.	<b>Rating 1 – 6</b> Usually, no further action will be required except for monitoring to ensure the risk does not change. However, if it is possible to reduce the risk levels still further, by using controls that are “reasonably practicable”, then this should be done.