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Science and Design and Technology

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Revision History

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Table of Contents

1. Purpose

To establish guidelines and maintain a safe learning environment in science laboratories and design and technology (DT) classrooms where activities undertaken may carry additional hazards not experienced elsewhere in the school facility.

2. Scope

All staff, whether employed by the school or individuals/organisations utilising the science laboratories or DT classrooms, must be informed about and comply with the established procedures and risk assessments. It is imperative that they strictly adhere to the outlined protocols. Guidance and instructions on how to safely operate within these settings are included throughout this document.

3. Definitions

Emergency: A sudden, urgent, usually unexpected occurrence or occasion requiring immediate action.

Fume Cupboard: A local ventilation device that is designed to limit exposure to hazardous or toxic fumes.

Earth Bonding and Insulation Test Set: Equipment used for electrical testing.

Autoclave: A machine used to carry out scientific processes requiring elevated temperature and pressure.

4. Roles and Responsibilities

4.1. Principal

- The Principal is responsible for having procedures and guidelines in place for the safe operation of science laboratories and DT classrooms.
- To approve budgets for the provision of equipment.

4.2. Head of Business Operations / Operations Manager

- To make sure that there are suitable procedures and guidelines in place for the safe operation of science laboratories and DT classrooms.
- To ensure that suitable arrangements are in place in case of an emergency and that there is adequate provision of personal protective equipment (PPE), emergency, and first aid equipment.
- To coordinate with the education and operations teams to ensure there are suitable facilities and equipment within the school, allowing safe learning.
- To approve budgets for the provision of equipment.

4.3. Facilities Manager

- To facilitate the distribution of this document to the appropriate teaching staff and any other party that will be using the mentioned school facilities.
- To provide oversight ensuring that lab technicians are storing chemicals appropriately and that they are keeping an accurate chemical register.
- Confirm there is suitable PPE provision.
- To ensure there are suitable facilities and equipment within the school creating a safe learning environment.
- To facilitate the safe destruction and disposal of out of date and surplus chemical supplies.

4.4. Lab Technician

- Responsible for the safe storage, handling and distribution of all chemicals within science laboratories.
- To maintain an accurate chemical register.
- To facilitate the safe destruction and disposal of out of date and surplus chemical supplies.
- To ensure the correct PPE is worn and guidelines are meticulously followed when handling chemicals.

4.5. Teaching Staff

- To implement the procedures allowing the safe operation of science laboratories and DT classrooms.
- To ensure that all students receive briefings on the rules and guidelines and that these regulations are consistently adhered to in both science laboratories and DT classrooms.
- To enforce the wearing of PPE by all staff and students when it is necessary.
- Ensure that students are never left unsupervised in science laboratories and DT classrooms, rooms should be securely locked when not in use.

5. Guidelines

5.1. Summary Guidelines for all Teachers and Support Staff:

- All staff bear a shared responsibility for ensuring the safety of themselves, fellow staff members, and students. It is incumbent upon them to ensure familiarity with this policy, and the guidelines and procedures to which it refers. In addition, staff are obliged to promptly report any issues or failures in facilities or equipment that could jeopardise safety to the Facilities Manager.
- Staff members must exemplify good practices to students, adhering consistently to laboratory or classroom regulations. This includes wearing protective eyewear when it is mandated.
- Staff should be well versed in emergency protocols, knowing the precise locations of escape routes, firefighting equipment, eye wash stations, the mains electricity switch, and the main gas isolation as applicable.
- Lesson preparation should be thorough and risk assessments should be in place for experiments and practicals. Support staff should be allocated ample time to prepare resources safely.
- Laboratories and DT classrooms must be left in a safe condition. Appropriate arrangements must be made if equipment is to be left running or without direct supervision.
- Whenever feasible, gas supplies should be shut off at the end of the day and electricity supply to machinery should be isolated.
- The consumption of food and application of cosmetics is prohibited within laboratories, DT classrooms and preparation areas, unless a designated safe space has been allocated for this purpose. Additionally, students should abstain from drinking during science experiments to mitigate the risk of unintentional exposure to hazardous substances.

- When staff members are in a laboratory or a DT classroom alone, they should refrain from engaging in activities that could potentially result in a medical emergency.
- Students should never be left unsupervised in in a laboratory or DT classroom. Staff members requiring a brief absence should assess the risks and arrange for temporary supervision.
- Science laboratories and DT classrooms must be securely locked when not in use, and students should not enter preparation rooms unless continuous supervision can be guaranteed.
- Effective communication of health and safety guidelines holds paramount significance, and it is the responsibility of the Facilities Manager to ensure their proper dissemination to teaching staff. Any new directives or limitations introduced by a regulatory authority will be promptly conveyed to staff and this policy will be subject to updates accordingly.

6. Training

The Head of Secondary holds the responsibility of ensuring that training is delivered in a manner that effectively addresses the specific training needs of personnel across all departments. Specific training functions are outlined as follows; this should be read in conjunction with Appendix 4.

The Head of Subject is responsible for all health and safety within their department, this encompasses:

- Supervising the activities of staff and ensuring their compliance with guidelines and procedures.
- Conducting inductions for newly appointed support staff.
- Offering supervision and guidance for new teaching staff and recently qualified educators.
- Identifying professional development training courses for staff members.

Training related to the utilisation of specialised equipment, machinery, chemicals, or procedures falls under the purview of the subject matter expert within the respective department.

7. Equipment and Resources

7.1 Fume Cupboards

Regular testing of fume cupboards should occur at intervals not exceeding 12 months, along with a brief inspection before each use. Schools are encouraged to schedule annual testing to coincide with the end of August, just before the start of the new academic year. The laboratory technician is responsible for ensuring this scheduling is adhered to. All users should be trained to carry out a fume cupboard functionality test prior to use.

7.2 Electrical Testing

The Taaleem Group requires portable electrical equipment to be inspected and tested on an annual basis. It is the responsibility of the facilities team to ensure that this is carried out. This work should be carried out by a trained technician, appendix 4 details the staff that are trained to carry out this role.

7.3 Pressure Vessels

Autoclaves, pressure cookers and all other pressure vessels require periodic inspection. As with fume cupboards it recommended that inspections take place in August prior to the commencement of the new academic year.

7.4 Equipment Safety

All personnel responsible for procuring equipment are required to verify its safety and appropriateness for its designated use. Equipment provided by specialised educational equipment suppliers is assumed to meet these criteria, but all other equipment must be approached with vigilance and subjected to a thorough evaluation. In the event that a user identifies a potentially hazardous flaw in any piece of equipment they are obligated to promptly report it to both the Facilities Manager and Head of Department.

7.5 Personal Protective Equipment PPE

The school is committed to ensuring the provision of essential safety equipment including eye protection, gloves, laboratory coats, aprons, and any other necessary personal protective equipment (PPE) for the safety of both students and staff. To guarantee safety, a ready supply of safety glasses is maintained for general use and goggles or face shields are available for specific tasks where risk assessments deem them necessary. Additionally, technicians regularly inspect the condition of eye protection to ensure its effectiveness.

7.6 Chemicals

The responsibility for organising the safe storage, distribution, and when needed, disposal of chemicals is assigned to the lab technician. Their role encompasses guaranteeing the secure storage of chemicals, minimising the risk of fire, explosions and spills and maintaining legible labels. Participation in hazardous activities involving chemicals is limited to those who have received training and safety guidelines should be followed. Under no circumstances should students have unsupervised access to chemicals.

7.7 Waste disposal

Unused and expired chemicals and equipment must be disposed of in an environmentally responsible manner in compliance with pertinent governmental regulations. Chemicals that are past their expiry date should be clearly marked and segregated from in date chemicals so that they cannot be inadvertently used.

7.8 Machinery

Every piece of machinery should be operated under the supervision of a competent individual who has received proper training for its operation. It is imperative that all machines are equipped with distinct isolation buttons that are clearly labelled, and if safety guards are present, they must be engaged. Routine maintenance should be conducted on machines at least once per year, and regular inspections and pre use checks should be carried out to verify the equipment's material condition.

8. Risk Assessment

Schools are obligated to provide risk assessments for any potentially hazardous activities taking place within the premises. Generic risk assessment for design and technology classrooms and science laboratories can be found at reference TG-OSH-10 Taaleem Group Risk Assessments, it is essential that each school tailors the risk assessments to their unique environments to ensure the safe functioning of classrooms and laboratories.

Given the diverse and specialised nature of activities occurring in science laboratories and DT classrooms it is not feasible for schools to develop risk assessments for every single activity. Consequently, schools adhere to the practice of adopting pre-published 'model' or 'general' risk assessment from recognised sources created explicitly for educational purposes.

The school has endorsed the following publications as a trusted source for model risk assessments and best practices for educational purposes.

Publications

CLEAPSS Science publications generally)

(CLEAPSS, HazCards, current edition)

(CLEAPSS, Laboratory Handbook, current edition)

(CLEAPSS, Recipe Sheets, current edition)

(CLEAPSS, Practical Procedures)

(CLEAPSS, Supplementary RAs)

(CLEAPSS Design and Technology publications generally)

Whenever a new course is introduced or developed, all associated activities, including preparation and cleanup should be cross referenced with the necessary risk assessment. Any shortfalls or deviation should be accounted for in lesson plans and in updated risk assessments. Subject specialists as detailed in appendix 4, bear the responsibility of ensuring that this process is rigorously followed. It is vital all risks are appropriately mitigated through the supporting documentation in place, the following considerations shall be taken into account:

- The age and ability of the participating students.
- The suitability of the room, including factors such as size, availability of services, and ventilation.
- Any potential hazardous substances, including solution concentrations.
- The class size.
- Specific details of the proposed activity.

9. References

- OSHAD-SF – Management System, Version 3.1 – March 2017
- TG-OSH-10- Taaleem Group Risk Assessments

Appendix

Appendix 1. Example Science Laboratory Rules

The Science Laboratory is a place of adventure and discovery however it can also be dangerous if rules are not followed, at all times. You put yourself at risk when you do not understand the hazards, or you are careless. Report any accidents immediately to your teacher and if in any doubt, ask.

1. Only enter a lab when told to do so by your teacher, never run or throw things in the lab and keep your work and floor area clear with bags and coats out of the way.

2. Follow instructions precisely; check bottle labels carefully and keep tops on bottles except when pouring liquids from them; only touch or use equipment and materials when told to do so by a teacher and never remove anything from the lab without permission.

3. Wear eye protection when told to do so and do not remove it until practical work is finished and resources and equipment have been packed away.

4. When using naked flame (bunsen/spirit burners or candles), make sure that ties, hair and baggy clothing are tied back or tucked away.

5. Always stand up when working with hazardous substances or when heating things so you can quickly move out of the way if you need to.

6. Never taste anything or put anything in your mouth in the laboratory. If you get something in your mouth spit it out, wash your mouth out with water and notify the teacher.

7. Always wash hands carefully after handling chemicals, microbes or animal and plant materials.

8. If you are burnt or get chemical splashes on your skin, wash the affected part at once with lots of water and notify your teacher.

9. Never put solid wastes down the sink, dispose of them following your teacher’s instructions.

10. Wipe up all small spills and splashes and report bigger spillages to your teacher.

Appendix 2. Example DT Classroom Rules

You are responsible for your own safety and the safety of others. Report any accidents immediately to your teacher and if in any doubt, ask.

1. Only enter the classroom when told to do so by your teacher, never run or throw things and keep your work and floor area clear with bags and coats out of the way.
2. Follow instructions precisely; only touch or use equipment and materials when told to do so by a teacher, do not take shortcuts and ask if you need help.
3. Wear an apron and eye protection when told to do so and do not remove it until practical work is finished and machinery is shut down and no longer in use.
4. When using machinery, make sure that ties, hair and baggy clothing are tied back, tucked away or covered by an apron.
5. When using machinery always use the machine guards that are provided.
6. Never blow dust or touch swarf.
7. When finished with a machine make sure tools are returned to the correct stowage and the machine is cleared down.
8. Wipe up all small spills and splashes and report bigger spillages to your teacher.
9. Never complete practical work sitting down, stand up and securely store your seat away.
10. Never remove anything from the DT classroom without permission.
11. If you are scalded, burnt or chemicals splash on your skin, wash the affected area with lots of water and inform the teacher.

Appendix 3. Chemical Spill Procedure

This procedure delineates the necessary steps for effectively managing an uncontained spill of a hazardous substance to minimise the potential for harm and environmental damage.

A chemical spill can be categorised as either a major or a minor, determined by the risk associated with the hazardous substance and extent of contamination. For instance, a minor spill might involve a small volume of concentrated sulfuric acid within a fume cupboard, which, whilst posing a high risk, can be readily neutralised and removed. On the other hand, a major spill of could entail the uncontrolled release of a chemical or gas in an enclosed, unventilated space, representing a substantial risk to those in the vicinity.

Major Spill

In the event of a significant chemical spill:

- **Contain the spill** using available equipment (e.g., pads, booms absorbent powder) if it is safe to do so, while observing appropriate personal protective measures as outlined in the Material Safety Data Sheet (MSDS).
- **Do not attempt to clean the spill** unless properly trained to do so.
- **Immediately notify the Head of Department and the Facilities Manager.**
- **Secure the area** and raise the alarm, ensuring the evacuation of individuals not involved in the containment.
- **Attend to injured staff and students** and, if necessary, contact the medical emergency number 998.
- If required, engage a specialist spill cleanup company.
- Upon completion, review the general spill clean-up procedure.

Minor Spill

When dealing with a minor chemical spill:

- **Promptly inform the Head of Department and Facilities Manager** if assistance is required.
- **Secure the area** if toxic fumes are present to prevent others from entering.
- **Deal with the spill** following the instructions provided in the MSDS.
- **Wear appropriate PPE** when cleaning up spills.

Appendix 4. Staff Role and Emergency Contact Details

Staff Roles

Staff roles and/or emergency contacts, last updated: Sep 2023

Responsible for overseeing health and safety in the Science Department:

Primary: Alecia Kirby

Secondary: Tania Tufft

Responsible for overseeing health and safety in the Design and Technology Department:

Head of Technology: Pieter Mc Cabe

Laboratory Technician: **Shahna Abdulkareem**

Design and Technology Technician: **Ugo Canepa**

The person in charge of chemical storage and disposal: **Shahna Abdulkareem**

Point of contact for electrical and inspection and testing: **Purushothaman**

Subject specialist for consultation over health and safety in Biology: **Tania Tufft**

Subject specialist for consultation over health and safety in Chemistry: **Tania Tufft**

Subject specialist for consultation over health and safety in Physics: **Tania Tufft**

Subject specialist for consultation over health and safety in Design and Technology: **Ugo Canepa**

Emergency Contacts

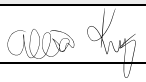
In the case of any accident contact the schools nurse - +971565209980

In the event of a serious accident, contact the school nurse and emergency services on 998

Appendix 5. Staff Signature Page

The below should be signed by all science and design and technology teachers and support staff.

I hereby acknowledge that I have read and understood the guidelines contained within this document and agree that activities within the classroom shall take place in compliance with the relevant risk assessments and safety guidelines.

Name	Date	Signature
Alecia Kirby	Thursday, March 21st 2024	

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Name	Date	Signature
TANIA TUFFT	20.03.2024	T.Tuffa

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Name	Date	Signature
Peter McCabe	20/03/2024	

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Shahna Abdul Kareem	20-03-2024	

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Name	Date	Signature
PURUSHOTHAMAN	19-03-2024	

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Name	Date	Signature
Ugo Canepa	20/03/2024