

Safety Handbook for Primary Science



**Science Education Section
Education Bureau
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PREAMBLE

To align with the promotion of STEAM education and Primary Science, schools and teachers have been actively providing students with diversified “hands-on and minds-on” learning activities, giving them the opportunity to integrate and apply scientific knowledge and skills, cultivate scientific and creative thinking. To this end, EDB has compiled the “Safety Handbook for Primary Science” (2024) to provide consideration principles and guidelines for safety issues related to Primary Science, so that schools can follow them in terms of safety management, risk assessment, equipment storage, etc. of Primary Science, and enhancing safety awareness among schools and teachers.

When planning and conducting Primary Science-related learning and teaching activities, teachers are advised to follow the advice in this safety handbook and relevant guidelines issued by other government departments, make sensible and professional judgments based on the actual situation and students’ needs, take appropriate safety measures to avoid accidents, and take appropriate actions when accidents unfortunately occur. Should there be any comments or suggestions regarding this Handbook, please feel free to contact us by post or e-mail. Our postal address and email are as below:

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Equipment and Management of Primary Science

CHAPTER 1 EQUIPMENT AND MANAGEMENT OF PRIMARY SCIENCE

1.1 Equipment and Facilities of Primary Science

- Schools should make the best use of Primary Science equipment and facilities to provide students with hands-on and minds-on learning activities, so as to enhance learning effectiveness. In addition to conducting learning activities in the classroom or appropriate places in the school, Primary Science learning activities can also be carried out through outdoor visits, field studies, study tours outside the HKSAR etc. If teachers want to learn more about the articles and equipment of Primary Science, please refer to the reference lists of the “Furniture and Equipment (F&E) List for New Schools” on the EDB webpage. Its web link could be found in Appendix 3.
- Primary Science Rooms (Formerly known as the General Studies Rooms) should be equipped with fire-fighting and first-aid equipment. Schools must properly maintain the fire extinguisher(s) in the Primary Science Room and ensure that it is/they are in good condition. In accordance with the laws of Hong Kong, schools shall arrange for a registered fire service installation contractor to inspect the fire extinguisher(s) at least once a year.
- If schools need to use naked flames to conduct Primary Science learning activities, they must ensure that the venues have sufficient fire-fighting equipment, such as fire extinguisher, sand bucket or fire blanket.
- Schools may procure equipment and devices necessary for learning in Primary Science with the authorisation of the Incorporated Management Committee (IMC) / School Management Committee (SMC) or in accordance with the schools’ established procedures. Schools should store the equipment properly in appropriate places and should comply with the “Safety precautions and guidelines” of the [*School Administration Guide*](#), and the safety precautions of [*Education Regulations \(Chapter 279 Subsidiary Legislation A\)*](#).
- Schools should ensure that equipment and devices are properly installed and regularly inspected and maintained by qualified personnel. Also, such items should be operated by qualified or trained personnel. Schools should consider all potential risks and safety management issues thoroughly before procurement or installation of such equipment or machines.

- Schools have a general duty to ensure, so far as reasonably practicable, the safety and health of their employees at work. Schools should take all reasonable precautions to reduce risks and avoid accidents.

1.2 Management of Primary Science Room and Subject Resources

- Schools should appoint at least one Primary Science panel chairperson or teacher to manage the resources of Primary Science / equipment and facilities in Primary Science Room. This is to ensure that the facilities and articles are properly classified, arranged and kept to allow easy access for teachers. Regardless of the presence of a Primary Science Room at school, a clear inventory of equipment and articles should be compiled for teachers' reference and review, and manage the subject resources properly. All equipment and leftover articles should be returned after use. A clear loan register should be kept.
- The appointed Primary Science panel chairperson or teacher should carefully arrange the storage of equipment and articles to ensure that everyday operation is safe and effective. For instance, heavy articles, glassware and chemicals could be stored at the bottom of a cupboard.
- Generally speaking, a "Preparation Room (Science)" is annexed to a standard Primary Science Room. Teachers should put valuable or potentially hazardous equipment, articles, chemicals, etc. in the Preparation Room (Science), and lock them if necessary to prevent loss or danger.
- Students are not allowed to enter the "Preparation Room (Science)" under any circumstances and teachers should not request students to enter the room. There should be a clear notice on the door of "Preparation Room (Science)" to remind students not to enter.
- Map showing detailed escape routes should be displayed at a conspicuous spot in Primary Science Room. Students should be clearly informed of such routes.
- For schools without Primary Science Room, the equipment of Primary Science should also be stored properly and safely, and lock them if necessary.
- Primary Science is a broad curriculum and there are abundant resources for different learning strands. Effective management of the subject resources will help teachers devise diversified learning and teaching activities.

1.3 Settings of the Primary Science Room

- During activities, all students should be within sight of teachers. There should be no obstacle indoors which hampers teachers' monitoring of students' activities.
- Primary Science Rooms should be adequate space for students to conduct learning and teaching activities in a safe manner.
- Keep the surface of workbenches for teachers and students neat and tidy at all times. Any sharp edges or corners should be properly handled.
- The materials of the surface of workbenches should be non-toxic, fireproof and resistant to acids and alkalis. Do not perform activities involving heating and electricity on thermally or electrically conductive surfaces of workbenches.
- Ventilation should be maintained when performing learning and teaching activities in Primary Science Rooms or classrooms. When using naked flames, chemicals, as well as equipment or materials which may produce exhaust fumes, it is necessary to switch off all air-conditioners, switch on exhaust fans and leave all windows open. Notice of such regulations should be posted at a conspicuous spot in the Primary Science Room.
- Floor materials should be non-slip and the floor should be free from devices or objects which cause tripping easily.
- There should be adequate natural light or good artificial lighting in the Primary Science Room. The impact of glare should be prevented.

1.4 Safety Management

1.4.1 Points to notes for Primary Science Subject Panel on Safety Management

- Hazardous articles and materials for science inquiry must be kept properly. For schools with Primary Science Rooms, these items should be stored in the "Preparation Room (Science)" and locked if necessary so that they are accessible to teachers only and must not be handled or delivered by students. For schools without Primary Science Rooms, schools should also arrange a suitable storage venue and ensure that materials are accessible by teachers only.

- Schools should conduct regular inspections on the equipment, tools, chemicals, personal protective equipment, etc., of Primary Science and carry out repair and maintenance as necessary (e.g. perform regular checking on the first aid kit to ensure that the suggested items are sufficient and maintained in good condition). Information on the management of chemicals and items in the first-aid kit can be found in Chapter 3 and 6 respectively.
- In each school year, teachers should discuss the safety issues of the learning and teaching activities of Primary Science in the panel meetings. They should review and enhance from time to time the safety management measures (e.g. providing adequate safety instructions and personal protective equipment to students) to ensure the safety of teachers and students.
- All safety information in relation to the learning and teaching activities of Primary Science, such as minutes of meetings, circulars, circular memorandums and letters issued by the Education Bureau, should be regularly updated and be kept in a specific location for easy access by teachers. Besides, the subject panel should provide such information to newly appointed teacher(s) (including student-teacher(s)), and let them know.
- Schools should request parents to report the medical history of their children annually. Before carrying out activities that may pose health risks to students (e.g. activities which involve touching flowers, physical exercise and those related to food), relevant team(s) in school should provide clear and sufficient information to the panel of Primary Science. The teachers of Primary Science should be aware of students' relevant medical history and allow them to participate in such activities only under safe conditions. Details are available in relevant chapter in the [School Administration Guide](#).
- Teachers must be fully prepared for the arrangement of learning and teaching activities, including clear understanding of the procedures involved in the activities, familiarity with how to use various equipment, tools and chemicals involved, and risk assessments prior to the activities. Please refer to Chapter 1.5 for details.
- When carrying out learning and teaching activities, teachers must take appropriate safety measures according to the potential risks of individual experiments. Before conducting demonstrations or activities, teachers should clearly explain related safety points to students and ensure the learning and teaching activities are performed in a safe manner. When the use of tools is involved, teachers and students should stay alert to the safety matters and keep the environment clean and tidy.

- Do not assign any homework which involves the performance of potentially hazardous experiments at home.

1.4.2 Guidelines on Dealing with Accidents and Emergencies

- Teachers should handle accidents and emergencies according to the relevant chapters in the [School Administration Guide](#), such as “Safety precautions and guidelines”, “Handling accidents and medical emergency” and “First aid”.

1.5 Risk Assessment

- A risk is the likelihood of a hazard causing harm in practice. The objectives of risk assessment are to identify hazards involved in an activity and take preventive measures to control such risks.
- A hazard is anything with the potential to cause harm to a person or damage to property. Examples of hazards include objects falling from height, slippery floor, electric shock and loud noise which may cause permanent hearing impairment, as well as hazardous items or procedures with problems such as burns, scalds, cuts and respiratory discomfort.
- Subject panel should keep the risk assessment record of learning activities for future reference and timely review or update.

1.5.1 When is it required to conduct Risk Assessment?

- Teachers should conduct risk assessment before carrying out learning and teaching activities. They should be aware if there is any potential hazard regarding the nature, venue, time, items to be used and procedures of activities. Also, they should devise plans to control risks, including the use of personal protective equipment (PPE) (please refer to Chapter 2.2.2 for details). Before starting any learning and teaching activities, an appropriate risk control and safety measures should be adopted in order to minimize the risk to teacher themselves and others. **Safety is the prime concern.**
- In order to conduct science inquiry activities, teachers must clearly understand the procedures involved in the science inquiry activities and perform trial runs before class. For demonstration of science inquiry activities by teachers or science inquiry activities to be handled by students, if they have never been

performed or have been modified, teachers should assess the risk involved and perform trial runs before class. If the risk cannot be controlled easily, teachers should not demonstrate or allow students to perform the science inquiry activities.

- In recent years, there has been a remarkable increase in adopting open-ended investigative activities and project learning. When teachers plan or guide students through such activities, they should consider the safety issues. Both teachers and students should be aware of the potential hazards, ways to reduce the risk and the emergency procedures.
- Unlike science-related subjects in secondary schools, science-related inquiry activities in Primary Science are relatively easy and do not involve the production of harmful or potentially dangerous gases. Therefore, for safety reasons, inquiry activities involving harmful or potentially dangerous gases should not be conducted in schools.

1.5.2 Conducting a Risk Assessment

- The objective of conducting a risk assessment is to protect oneself and others from harm and avoid property damage. The major steps are :
 1. **Identifying potential hazards:** hazardous substances to be used or to be produced, potential risk associated with the procedures or equipment (e.g. flammable items, glassware, and containers contaminated by bacteria).
 2. **Assessing the associated risk ;**
 3. **Adopt corresponding safety and risk control measures:** (e.g. using less hazardous articles, reducing the quantity, using protective screen, as well as wearing protective gloves and safety spectacles).
- The considerations of risk assessment include but not limited to:
 - The potential hazards associated with materials, tools, equipment, etc. ;
 - Age and ability of students, and their experience in handling hands-on and minds-on activities;
 - Students' individual needs, such as physical health, emotional conditions, behavior and special educational needs;
 - The number of students and venue which allow learning and teaching activities to be conducted safely;
 - The level of supervision required; and
 - Possibility to arrange sufficient manpower to guide and support students.

- Examples of risk control and safety measures (please refer to Chapter 2 for details) :
 - Putting on personal protective equipment (PPE);
 - Eliminating hazards, such as removing devices or objects that may cause slips/tripping;
 - Replacing the materials or tools with safer ones;
 - Identifying situations which may cause accidents and devising plans to guide students, such as distributing to and collecting materials from students in a safe manner, stock-taking on equipment and tools involved before and after activities and explaining to students the safety matters of related equipment and tools;
 - Considering all possible accidents and emergencies and relevant contingency plans;
 - Making sure that the necessary safety equipment, protective equipment and emergency supplies are readily available (e.g. ensuring the availability of fire-fighting equipment nearby before performing science inquiry activities which involve naked flames) and teachers know how to use them; and
 - Planning how to collect items and handle the waste safely after activities.

Examples of risk assessment are shown below:

 Example 1: Demonstration – launching water rockets

1. Identifying potential hazards 2. Assessing the risk associated	- The water rocket may hit the people or objects within its trajectory and cause bodily injury (including head and eye) or smash of window. - The components of the water rocket may be detached in the process of applying pressure on the launching system. - The water rocket may deviate from the expected trajectory. - The launching area is wet and may cause slips.
3. Adopt corresponding safety and risk control measures	<i>Preparation for the activity:</i> - Arrange sufficient helpers. - Pay attention to the proper ways to operate the water rocket launcher, especially the maximum pressure which the launcher can withstand. Teachers should perform trial runs before classes to find the appropriate level of gas pressure on the launching system and avoid overpressure before science inquiry activities. - Use soft materials to make the top part of the water rocket. - Perform launching in an open area. Set the launching zone, landing zone and safety zone.
	<i>Points to note during the activity:</i> - When it is about to launch the water rocket, all students, except the personnel who is going to launch the water rocket, should stay within the safety zone. - The personnel involved in the launching process should wear safety spectacles. - Teachers should remind students to observe carefully the trajectory of the water rocket so as to respond appropriately.
	<i>Follow-up after the activity:</i> - Clear any puddles on the floor as soon as possible. - If the floor is not dry yet, leave a sign of “Slippery Floor”. - Check the launcher and water rocker to see if there are any damaged parts.

 Example 2: Testing for starch in food sample

1. Identifying potential hazards 2. Assessing the risk associated	- Iodine solution is irritant. The stains might not be removed easily. - Harm caused by glass debris from glass droppers/ glass rods. - Consider adopting group science inquiry activities or demonstrations according to the circumstances.
3. Adopt corresponding safety and risk control measures	<i>Preparation for the activity:</i> - Use iodine tincture for medical use to replace iodine solution. - Use the solution of the lowest concentration of which an obvious experimental result could be achieved. - Use plastic droppers to replace glass droppers/glass rods. - Food samples could be put inside plastic containers. Keep the containers, reagents and plastic droppers inside a plastic tray and affix the label “Food samples for science inquiry activities only. Not edible.” - Arrange helpers as necessary.
	<i>Points to note during the activity:</i> - Wear safety spectacles. Remind students to keep safety spectacles on until everyone has finished the science inquiry activities. - Check if students grasp the skills of using droppers. Remind them to keep the tips of droppers pointing downwards and use them within the plastic tray only. - Remind students the food samples are not edible and are reserved for science inquiry activities only. - Remind students not to touch their eyes, mouths and faces during the science inquiry activity. - Wash hands thoroughly after the science inquiry activities.
	<i>Follow-up after the activity:</i> - Stock-taking on chemicals and articles involved after activities to check if all items are returned. - Put the food samples used in sealed plastic bags. Do not dispose of them in the rubbish bin(s) in the classroom.



2

Safety Precautions for Activities of Science and Technology

CHAPTER 2 SAFETY PRECAUTIONS FOR ACTIVITIES OF SCIENCE AND TECHNOLOGY

2.1 Preparatory Work Prior to Activities

- Before carrying out activities, a risk assessment must be conducted to check whether items and procedures involved are safe and trial runs should be conducted beforehand to ensure the grasp of the skills involved in every step. A risk control plan should also be devised, including the use of personal protective equipment.
- The appliances and equipment for activities should be safe and reliable. For safety reasons, never use inappropriate substitutes for science inquiry activities (e.g. do not use ordinary glass containers to replace beakers for heating). Instruments or articles should be checked by teachers beforehand to see if they operate normally or there is any damage or loosened part(s).
- Whether preparing for or conducting classroom science inquiry activities, if they involve heating with naked flames, ensure that they are carried out in a well-ventilated area and that there are adequate fire-fighting and first-aid items in the relevant venue. Flammable items should not be placed near the activity area to avoid accidents.
- Fire bucket, first aid box and eye-wash unit are standard items in the [“Furniture and Equipment List for New Schools”](#).

- Red sand bucket made of iron with lid should be labelled “FIRE BUCKET”. Its size is approximately 245 mm x 230 mm (diameter x height). It is equipped with a spade. There should be a regular inspection to ensure the sand inside is dry and free from sundry articles.

- First aid kits should be placed in conspicuous and easily accessible locations in Primary Science Rooms. First aid kits should be checked regularly to ensure that all recommended items and equipment are present in sufficient quantities and in good condition. Please refer to Chapter 6 for the equipment in the first aid kit.



Sand bucket with a spade inside

- Eyewash equipment (i.e. eyewash bottles) should be placed near the first aid kit for flushing eyes. The eyewash bottle should be kept clean at all times and the distilled water in the bottle should be replaced regularly to prevent bacterial growth.

- Lift heavy objects with proper posture. Ask for assistance whenever necessary. When carrying heavy objects, use an appropriate carrier (e.g. trolley) as far as possible.

2.2 Points to Note on Learning and Teaching Activities

2.2.1 Conducting Learning and Teaching Activities

- Teachers should give clear instructions and pay attention to students' response and classroom discipline. If necessary, halt the activity immediately to prevent accidents.
- During science inquiry activities, no inflammable and sundry articles, such as books and paper, are to be placed on the benches.
- Long hair, loose ties, scarf or other loose clothing items must be secured properly before any activities.
- After touching chemical, testing paper, chemicals, animals, plants, soil or water samples, one should wash his/her hands with soap and water thoroughly as soon as possible.
- Use suitable safety facilities and personal protective equipment (e.g. safety screen, safety spectacles, gloves, aprons or laboratory gown) whenever necessary.
- Teachers and students must wear safety spectacles when conducting activities that may lead to eye hazards. (Please refer to Chapter 2.2.2 for details.)



Wear safety spectacles to prevent liquid from splashing onto eyes

- Activities involving ignition or use of chemicals must be conducted in a well-ventilated venue. When conducting such activities in an air-conditioned Primary Science Room or a classroom, switch off all air-conditioners, switch on the exhaust fan(s) and leave all windows open.
- Students should not kneel on chairs or lean on tables/workbenches when conducting science inquiry activities.
- When performing demonstrations which involve ignition, heating or transfer of chemicals, clear any students sitting close to the bench, keep the bench surface clean and tidy and remove all irrelevant items. A safety screen (as shown below) should be used to separate students from the apparatus to reduce the risk of splashing hot liquids or chemicals on students.



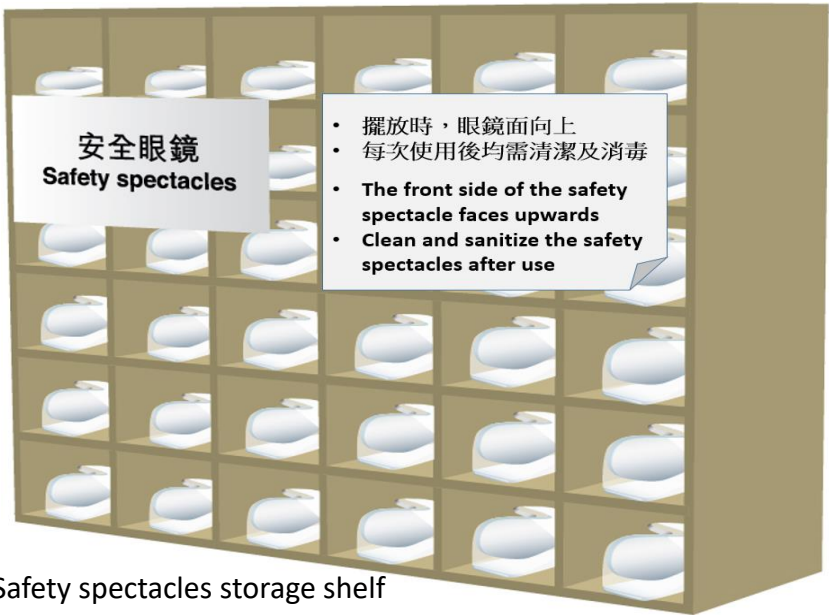
Safety screen

- Count the equipment, tools and articles for the science inquiry activities before and after activities. Remind students not to take away any science inquiry activities supplies.

2.2.2 Personal Protective Equipment

Students and teachers must wear suitable personal protective equipment (PPE) when performing activities with potential risk of bodily injury. Keep personal protective equipment clean and readily available. Replace the faulty ones immediately.

Common personal protective equipment is shown below:

Safety spectacles	● Provide sufficient safety spectacles for every teacher and student. ● Safety spectacles must be worn when conducting activities with potential risk of eye injury, including heating, use of chemicals or brittle objects and science inquiry activities with parts which might be detached (e.g. science inquiry activities related to forces and motion). ● Keep safety spectacles on until everyone has finished the science inquiry activities or activities. ● Replace scratched or defective safety spectacles immediately to avoid failure of protection purpose or affecting visibility. ● After activities, shared safety spectacles should be washed and sanitized thoroughly with water and detergent and allowed to dry.  Safety spectacles  安全眼鏡 Safety spectacles • 擺放時，眼鏡面向上 • 每次使用後均需清潔及消毒 • The front side of the safety spectacle faces upwards • Clean and sanitize the safety spectacles after use Safety spectacles storage shelf
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Protective
gloves

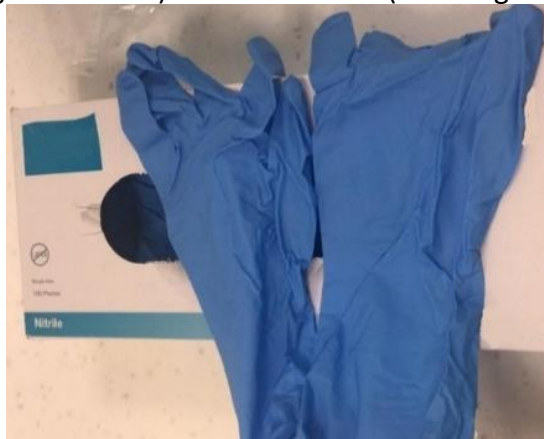
- When handling potentially dangerous articles, wear suitable protective gloves. When handling hot articles, wear gloves which are made of cotton or other heat-resistant materials. When handling irritant chemicals, acids, alkalis or microbes and alike, wear nitrile protective gloves. As some people are allergic to latex, surgical nitrile gloves are recommended.
- Check each protective glove before use to ensure that it is not damaged and replace the damaged ones immediately.
- If it is necessary to reuse gloves, they should be washed and sanitized thoroughly with water and detergent.



Cotton gloves
(handling hot articles)



Anti-slip cotton gloves
(handling hot articles)



Nitrile gloves (handling
chemicals or microbes)

2.2.3 Students' Discipline

Students should be disciplined and observe rules when performing science inquiry activities. For example,

- Students must **strictly follow** the instructions given by teachers when performing science inquiry activities. Without prior approval of teachers, students must not start a science inquiry activity or attempt alternatives on their own.
- Students **must not enter** the Primary Science Room nor perform science inquiry activities unless a teacher is present.
- Science inquiry activities **must** be performed only under teachers' supervision.
- Students are not allowed to take any items from the Primary Science Room or related to scientific inquiry activities without permission.
- Students should not run around or play in Primary Science Room or any venue for science inquiry activities.
- Students should not eat in the Primary Science Room (unless instructed by teachers during tasting activities involving food).
- Students should return all apparatus, reagent bottles and chemicals to designated trays or appropriate places immediately after use. The labels should face outwards for easy identification.
- Students should report accidents and apparatus damage to a teacher **immediately**.

2.3 Learning and Teaching Activities Involving Electricity

If common household electrical appliances or devices are required for learning and teaching activities, purchase products of reputable brands and produced by original manufacturers.

If it is necessary to use external chargers, use those equipped with short-circuit protection devices (including prevention of overcharging, overcurrent and battery temperature protection) and charger cables produced by original manufacturers. Should there be any doubt regarding its safety, stop using it immediately.

2.3.1 Points to note when using household electrical appliances

- Do not use any electrical appliances when hands, feet or body are wet or when

standing on a wet floor.

- When switching on and off an electrical appliance, follow the procedures stipulated in its user manual. If there is no specific procedure, in general, turn off the power supply and then switch off the button on the plug or electric socket (if any). Lastly, insert the plug or withdraw it from the socket.
- Electrical appliances should be switched off after use.
- Power cords should be affixed properly to reduce the risk of tripping.
- The use of an extension unit should be avoided as far as possible. If it is unavoidable, the plugs and sockets used must match for safety. No adaptor should be inserted into any extension unit or vice versa.
- All electrical appliances and their accessories should be procured from reputable agents or suppliers. Electrical appliances must bear proper markings, showing manufacturer's name or trade mark, model or type reference number, rated voltage (or rated voltage range in volts), rated frequency (or rated frequency range in hertz) and power input in terms of watts or kilowatts or rated current input in terms of amperes or milliamperes.
- Before using an electrical appliance, make sure its rated voltage and rated frequency match the voltage and frequency of the household power supply system.
- **Do not** store any flammable liquid near an electrical appliance as its vapour might be ignited by an electrical arc or sparks.
- If an electrical appliance is damaged, overheats, or produces abnormal noise, odour or vibration, stop using it immediately and arrange a suitable and qualified technician for inspection and repair.
- Teachers should comply with the regulations on the safe use of electricity set by the government. **The following points should be noted** if electrical appliances are used in teaching:
 1. For the electrical appliances which could be used in Primary Science, use only plugs which complied with the safety requirements. Under normal circumstances, teachers should avoid using adaptors. If it is unavoidable, please refer to the [*"Household Electrical Safety Handbook"*](#) issued by the Electrical and Mechanical Services Department of the HKSAR.
 2. Check electrical appliances before use to ensure that they are not damaged, especially when the appliances have not been used for a prolonged period.

Adhere to the instructions of the user manual when using and maintaining electrical appliances. All sockets should be checked regularly. Stop using any sockets with damage, cracks or signs of overheating (e.g. discolouration or charring) immediately and arrange a suitable and qualified technician for inspection and repair.

3. If the safety of a power supply unit/electrical installation is in doubt (e.g. frequent tripping), arrange registered electrical contractors for repair immediately. All electrical work related to the power supply unit/electrical installation (e.g. including addition, alteration, inspection, testing and repair) should be performed by registered electrical contractors.

2.3.2 Points to note when using dry cells and external charger

- Pay attention to the safe storage of electrical products. Remove dry cells from electrical products when not in use. This is to prevent damage to electrical products by damaged dry cells or accidents caused by high temperatures produced when there is a short circuit.
- Chemicals inside dry cells are potentially hazardous. Dispose of any dry cells that show any signs of corrosion.
- Store dry cells and external chargers in a cool and dry place and keep them away from heat, moisture and metal objects. To avoid accidental short-circuit of dry cells (e.g. when the loosely packed dry cells roll around in drawers and trays, contact of cell terminals may cause short circuit), dry cells should be placed neatly and have at least one of the terminals covered by plastic tape (or adhesive tape). Prevent external chargers from impact or compression, which could result in displacement or detachment of internal parts and in turn causes a short circuit, overheating, etc. Avoid placing external charger or dry cells adjacent to metal objects, which may cause a short circuit.
- Pay attention to the instructions on the use of dry cells and electrical appliances. If an electrical appliance requires a specific type of dry cells, do not replace them with other types of dry cells even if the size is the same. **Never** use a mix of different kinds of dry cells within a battery.
- The battery voltage should not exceed the rated voltage of the equipment. When charging an external charger, avoid using it to charge mobile phones or other devices. It could overload the charger and lead to overheating.
- Use and charge rechargeable batteries in accordance with the manufacturer's instructions. Use designated chargers.

- To minimize the risk of fire caused by a short circuit, external chargers in use should be placed within sight and in a well-ventilated environment, as well as free from obstruction to heat dissipation. Do not place any charging devices near inflammable substances, such as clothes. Avoid prolonged charging or overcharging. If an external charger or rechargeable cell often fails to be fully charged or drains quickly, it is getting worn out and replacement is required. Stop using or charging immediately if there are any signs of deformation, swelling, overheating or production of abnormal odour.
- For safety purposes, it is not recommended to store and use batteries with a large volume or rechargeable cells with a large capacity.
- Do not allow students to crush, puncture or damage dry cells.
- Do not assign charging work to students.
- Do not heat or burn dry cells by any means.
- Three types of commonly available rechargeable cells (lithium-ion type, nickel metal hydride type and nickel-cadmium type) could be recycled. Cover the cell terminals with masking tapes before depositing them in a recycle box. This is a safety precaution to prevent danger caused by accidental contact of terminals during storage and transport. For rechargeable cells that are vulnerable to damage, seal them in plastic bags with adhesive tapes. For details, please refer to the Environmental Protection Department's [Rechargeable Battery Recycling Programme](#).

2.3.3 Points to note on science inquiry activities involving connection of simple circuits

- Distribute the articles for science inquiry activities only when the safety matters are clearly explained to students. Collect and stocktake all the articles immediately after the science inquiry activities.
- Remind students to disconnect the circuits immediately after observing and recording the science inquiry activities results.
- It is recommended to fix the experimental set-up with a suitable circuit board or battery case and connect the components of the circuit in a safe manner.
- When conducting a science inquiry activity on testing the electrical conductivity of materials, provide sample materials which are safe to students.
- Before instructing students to connect circuits, teachers should assess the

potential for short circuits and/or overheating and remind students to avoid such situations.

- Never allow students to connect any circuit which might result in a short circuit, such as testing electrical conductivity of materials without a light bulb or other electrical component(s) with appropriate resistance.
- It is not recommended to use 9-volt dry cell as a large current may be produced. When a metal article touched both terminals of a 9-volt dry cell accidentally, it can cause a short circuit and lead to a fire accident.

2.4 Learning and Teaching Activities Involving Water

2.4.1 Fresh Water

- If the floor/table gets wet during activities, wipe it dry immediately. Teachers can prepare dry towels and mops to wipe the surface when necessary.
- Prepare extra containers for containing water. The container should be labelled as “Not for drinking, for science inquiry activity uses only”.

2.4.2 Hot Water

- **Never** allow students to conduct science inquiry activities involving boiling water and/or using boiling hot water to avoid being scalded by hot water and/or steam.
- The amount of hot water should not be too much, and the temperature should not be too high. It is enough to achieve the expected result.
- Unless necessary, never boil water in a classroom. Teachers could keep hot water in thermal flasks placed on plastic trays for activities.
- If hot water is required in group activities, the hot water should be distributed by teachers or other adults. Do not allow students to help with the distribution.

2.4.3 Experiments involving filtration and others

- Remind students **NOT** to drink the filtrate during science inquiry activities.
- In any science inquiry activities of which substances are added into water, for example, adding colourants or dyes into water, adding mud into clean water, the

containers should be labelled as “Not Drinkable, For Science Inquiry Activity Uses Only”. Those liquids should be stored at a location which is not accessible by students.

2.5 Learning and Teaching Activities Involving Heat

2.5.1 General Principles on Activities Involving Heating

- Both students and teachers should wear safety spectacles and secure their long hair, ties or other loose clothing.
- When conducting activities which involve heating with naked flames, leave all windows open and switch on exhaust fan(s) (if any). Make sure that there are adequate fire-fighting equipment (e.g. fire extinguisher, fire bucket or fire blanket) and first-aid items nearby. If the Primary Science Room or classroom is air-conditioned, switch off all air-conditioners.
- Prepare a fireproof mat (about 30 cm x 30 cm) for heat insulation.
- Prepare suitable trays, such as plastic trays for containing items for science inquiry activities (lay a fireproof mat on the tray first if the apparatus is relatively hot). If alcohol lamps, candles, etc. are used as a heat source for heating using naked flames, use metal trays instead.
- Prepare a dry towel to clean the bench surface and a wet towel for putting out the fire.
- Do not use naked flames for science inquiry activities involving hot air balloons. Satisfactory results can be achieved by using domestic hair dryers.
- Teachers who are not familiar with the operation of alcohol lamps could use small candles as substitutes.

2.5.2 Candles

- If a candle is used for heating in a science inquiry activity, fix it on a base and place it on a metal tray or sand tray.



Candles fixed on a sand tray or a metal tray

2.5.3 Alcohol Lamp

- In general, an alcohol lamp is sufficient to serve as a heat source.
- Check if there is any crack on the glass alcohol lamp. Its wick should be long enough to be soaked into liquid alcohol. It is recommended that the part of the wick exposed outside the container is no longer than 3 mm. If the wick is too long, the flame could become unstable.
- Ethanol alcohol should be used as fuel (**It is not recommended to use industrial alcohol containing toxic methanol as fuel**). The volume of fuel should be less than half of the volume of the container. When filling fuel, we must make sure that the alcohol lamp is cooled down and there is no flame or flammable items nearby. A funnel could be used to guide fuel and prevent it from spilling. Wipe the outer surface of the container after filling fuel with a paper towel and discard the paper towel soaked with alcohol immediately to prevent danger upon ignition. **Do not allow students to refill fuel content.**
- When using an alcohol lamp, the Primary Science Room/classroom must be kept well-ventilated. If the room is air-conditioned, switch off all air-conditioners and keep all windows open.
- Place the alcohol lamp on a metal tray and prepare a wet towel and fire-fighting equipment as appropriate. It helps extinguish the flame or prevent the fire from spreading in case the alcohol lamp is overturned accidentally.

- Before lighting up an alcohol lamp, open the lid and wait until the alcohol vapour has dissipated. Since there is alcohol vapour on the lid, let it evaporate by placing the lid sideways instead of covering the bench surface.



Lighting up an alcohol lamp

- Teachers should use matches or domestic gas ignitors to light up an alcohol lamp. Do not use lighters. **Never** light up an alcohol lamp with an ignited one.



Domestic gas ignitor

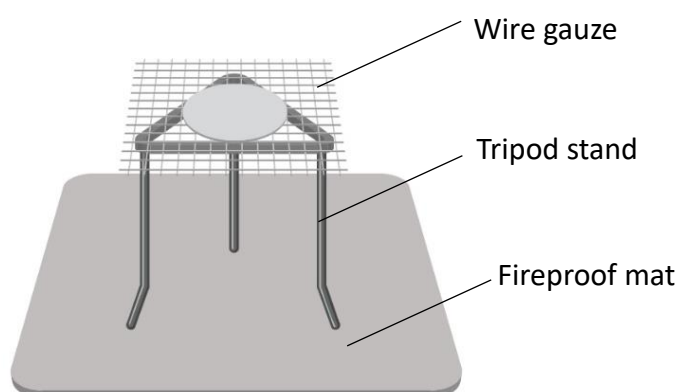


Safety match

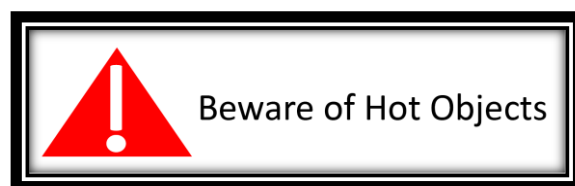
- Put out the fire by covering the lamp with its lid. Do not blow it out with mouth.
- Keep the alcohol lamp on a level surface. Do not elevate it with anything underneath or tilt it.
- Pay attention to the environment or changes in activity. Teachers should not leave a lit alcohol lamp unattended.
- Do not store alcohol in the alcohol lamp for a prolonged period. If the alcohol lamp is not reused within a short period of time, the remaining alcohol content should be discarded properly (refer to Chapter 3.3 for details) or temporarily stored in another reagent bottle with a clear label. To avoid contamination, do not pour the alcohol into the original reagent bottle.

2.5.4 Tripod Stand and Wire Gauze

- Use tripod stands with appropriate height for safety and maximum efficiency.
- Use wire gauze. **Never** use asbestos products.
- After heating, the wire gauze becomes very hot. **Never touch it directly with bare hands.** It could be considered to post a notice at a conspicuous spot to remind teachers and students **never** to touch the hot tripod stand and wire gauze directly with bare hands.



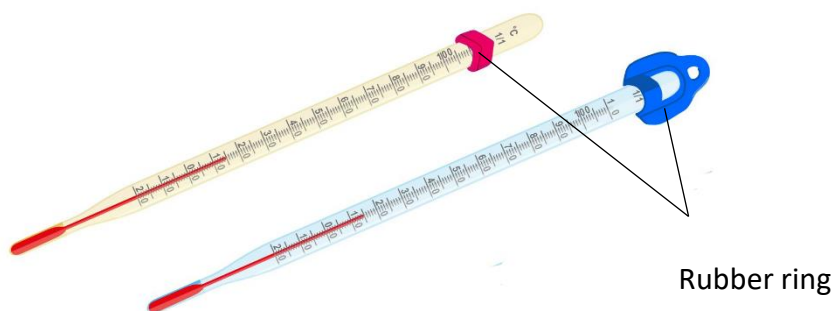
Tripod stand and wire gauze



Example of safety warning sign

2.5.5 Thermometer

- Different types of thermometers could serve different purposes, such as measuring air temperature, body temperature or for science inquiry activities. As mercury is highly toxic, **never use mercury thermometer in learning and teaching activities.** When a mercury thermometer is broken, any spilled liquid mercury will evaporate and become toxic mercury vapour.
- If it is necessary to use glass thermometers, use those equipped with support, e.g. triangular fittings, as far as possible. Support can prevent a thermometer from rolling on the table and thus breakage or falling.



Thermometer with triangular fitting

- Place a thermometer flat on a bench when not in use temporarily. Do not let it roll.
- Do not leave a thermometer unsupported in a beaker or test tube, no matter heating is in progress or not.
- **Never use a thermometer as a stirrer.** If a thermometer is broken, stop the science inquiry activities immediately to clear any glass debris. **(Do not allow students to do so).** For details on handling glass debris, please refer to Chapter 2.10.

2.5.6 Metal Ball and Ring

- This science inquiry activity should be demonstrated by teachers. It is not advisable to allow students to conduct the activity.
- Teachers should wear appropriate heat resistant gloves for demonstration.
- Metal balls and rings are used to show phenomena related to thermal expansion and contraction. Be cautious when handling heated parts.
- Place any heated components on a fireproof mat beyond students' reach, if it needs to be put down temporarily. They should be cooled immediately after the science inquiry activity with tap water at room temperature.



Metal ball and ring are placed on a fireproof mat after heating

2.6 Learning and Teaching Activities Involving Light

2.6.1 Torch and Other Light Sources

- Teachers should remind students not to observe light sources directly nor shine torchlights directly into their own eyes or others'.
- Do not use torches with quartz bulbs as observing such light sources directly may impair ones' vision.
- Lasers must **never** be used as a light source for experiments. It may cause eye injuries when laser beam enters the eyes.

2.6.2 Prism and Plane mirror

- Pay attention to the edges, corners or related parts of prisms and check if they are smooth to avoid injury.
- Use plastic mirrors, lenses or prisms as alternatives to replace the glass ones as far as possible.
- If science inquiry activities do not require clear images, consider using a paper mirror as a substitute, (e.g. using paper mirror to build models of environmentally friendly buildings, as shown on the right).



A model of environmentally friendly building made with paper mirror

2.6.3 Points to Note When Observing Solar Eclipse

- Watching solar eclipses improperly can cause permanent damage to eyes. Two methods of observing solar eclipses safely are provided for reference in **Appendix 2**.
- **Never look at the Sun directly** as strong sunlight can cause serious eye damage. When watching a partial solar eclipse, **even if only a portion of the Sun's surface**

can be seen, the sunlight is still very strong. **Do not** look directly at it with your naked eyes.

- Precautions must be taken when observing solar eclipses, such as solar filters dedicated to direct viewing of the Sun. The safest way to observe the Sun is by projecting its image on a piece of paper with a simple pinhole camera.
- Use only filters with a clear indication of “safe for direct solar viewing”. Do not look directly at the Sun with filters with any slight damages, with unknown origin or without detailed specifications. Do not use any filters if in doubt.
- **Never** look at the Sun through telescopes directly as they focus sunlight and can cause permanent eye damage. Do not use binoculars, astronomical telescopes or other optical devices to observe the Sun directly unless the devices are equipped with proper filters or projection viewers, and the observation is carried out under the supervision of experienced experts. Improper use of such equipment can lead to instant and permanent loss of vision.
- **Never** observe the Sun through sunglasses, single or a pile of black-and-white or coloured films, smoked glass or photographic filters. Although the Sun appears dimmer when observed through these objects, the light is still too intense for the eyes and it can lead to eye damage.
- **Do not** look at the image of the Sun reflected from the water surface, ink, glass surface, metal surface or mirror. The reflected sunlight is still too intense for the eyes and it can lead to eye damage.
- Solar eclipses typically last for a few hours. Avoid prolonged observation and exposure under sunlight.

2.7 Learning and Teaching Activities Involving Sound

- Never use too loud a volume when conducting science inquiry activities, and do not shout loudly into students' ears. Excessive sound volume can damage hearing.
- Students should be warned by teachers that it is dangerous to put objects into the ear canal (except ear plugs). During the activities, **do not** provide students with small objects which could be put into ear canals.
- Any used articles for science inquiry activities which might come into contact with lips or outer ears (e.g. articles which produce sound when blowing air into them

and stethoscope) must be disinfected before use by others.

- When conducting activities involving sound, be aware of any potential difficulties faced by students with hearing impairment. Teachers must cater for their learning needs and adjust the activities as appropriate.

2.7.1 Tuning Fork

- The usage is shown in the figure below:
 1. Hit the rubber block with the tip of the tuning fork arm and place the tuning fork next to the ear and listen (Figure 1);
 2. The rubber block hits the top of the tuning fork arm and then listen. (Figure 2).
- Do not strike a tuning fork on hard objects.



Figure 1

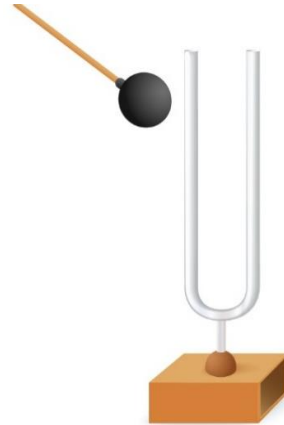


Figure 2

2.7.2 Stethoscopes

- Remind students not to shout at nor tap the diaphragm of the chest-piece when using a stethoscope. Excessively loud sounds could cause hearing impairment.
- For the sake of hygiene, disinfect the ear-piece and chest-piece after use by each student.



2.8 Learning and Teaching Activities Involving Force and Energy

2.8.1 Rubber Bands

- Use rubber bands carefully to prevent them from springing towards oneself or others. Also, refrain from using too thick rubber bands or excessive loops in order to prevent rubber bands from springing towards and cause injuries when they come off or break.

2.8.2 Force and Motion - Moving and Falling Objects

- Perform science inquiry activities exploring moving and falling objects at a venue with ample space. If the motion involves a rather long distance, conduct the activities at a suitable venue other than a classroom (e.g. covered playground).
- When carrying out an investigation on the motion of an object, teachers must instruct students to pay attention to the safety of themselves and others. Launching objects and projectiles must be pointed in an open area and away from people and objects.
- When carrying out investigation on falling objects from height (e.g. releasing an object from a position above students' height), it must ensure that teachers/students are standing at safe locations.
- When conducting science inquiry activities involving articles which contain parts that might be detached or fly at a high speed (e.g. launching a water rocket), safety spectacles must be worn and the activity should start only when everyone is standing at a safe location.

2.8.3 Testing related to weight or properties of materials

- In any science inquiry activity involving suspension of heavy objects (e.g. weights), be cautious about the choice of fixing points and the risk of bodily injuries (e.g. feet, toes) in case of accidental fall of such weights.
- To prevent falling heavy weights from hurting people around or damaging the floor, suitable articles (e.g. mats made of polystyrene or soft plastic) could be used as cushions.
- When testing the loading ability of a material, objects might fall off accidentally. Teachers and students should wear safety spectacles and take other preventive measures against injuries.

2.8.4 Magnets

- Students should be warned not to put magnets near their mouth, nostrils nor into their mouths.
- When using strong magnets, students should be reminded against injuries from clamping. If it is necessary to use strong magnets, teachers should perform trial beforehand. Do not let students use the magnets if the magnetic force is too strong.
- To prevent students from swallowing or sucking tiny magnets into their nostrils, avoid using tiny magnets, especially at junior primary levels.
- Avoid using iron filings to conduct science inquiry activities on the phenomena of magnetism to reduce the risk of students swallowing, breathing in or having filings blown into the eyes by accident.

2.8.5 Learning Science Phenomena from Toys

- Some toys could serve as teaching aids for topics such as force and energy. However, commercially available products might not be suitable for use in schools. Teachers should pay attention to the potential hazards associated, such as the coating of toy components may contain lead compounds, sharp edges or with component(s) which might be loosened and detached accidentally. Stop using a product immediately if teachers suspect that it is unsafe.
- For more [safety tips](#) on toys and children's products, please refer to the consumer advice given by the [Customs and Excise Department](#), HKSAR.

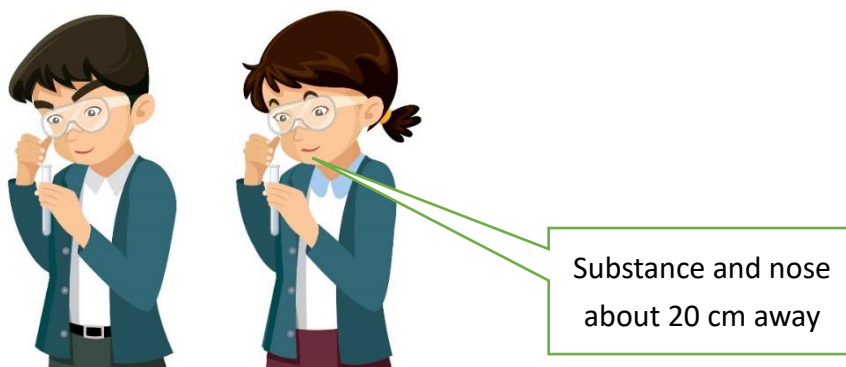
2.9 Learning and Teaching Activities Involving Smell, Taste and Food

When conducting such activities, teachers must first pay attention to the potential risk and be aware if students might develop allergies against the food. If a student shows any symptoms of allergy, identify the possible allergens and remove them immediately. If the problem is serious, seek medical treatment as soon as possible.

2.9.1 Activities Involving Smelling

- When conducting activities related to smell, teachers must remind students

never to put any substances near their noses. When performing tests, wear safety spectacles and put the substance at about 20 cm in front of the nose. Then, gently wave a hand above the substance (e.g. test tube mouth, as shown below) to induce air movement and bring the odorous gas into the nose.



Gently wave the air by hands and bring the odorous gas into the nose

- If a science inquiry activity involves smelling of some substances, the sample substances should be non-harmful. Do not use any irritants or allergic substances.

2.9.2 Activities Involving Tasting

- When planning and conducting activities related to taste, teachers should review students' medical records (refer to [“School Administration Guide”](#)), pay attention to students' different cultural backgrounds and eating habits, food allergies as well as other medical histories (e.g. Glucose-6-Phosphate Dehydrogenase Deficiency, abbreviated as G6PD deficiency) and students' willingness/consent. Common food allergens include peanuts, soya beans, tree nuts, cereals containing gluten, milk, eggs, wheat, crustacean, etc.
- When conducting activities involving food or taste, safety and hygiene issues must be carefully considered. Teachers should remind students to keep personal hygiene and avoid touching food directly with bare hands. If it is necessary to deal with food, teachers should pay attention to food hygiene and avoid food poisoning.
- Food or drink for science inquiry activity purposes should be labelled as **“For Science Inquiry Activity Uses Only”**.
- If the activity involves edible food, use cooking utensils reserved for cooking or processing food only. Label the food containers or utensils properly. Do not use them for other purposes.
- If it is necessary to taste food, teachers should use clean household containers and drinking water, and should use clean tools to transfer food. **Never** share

eating utensils.

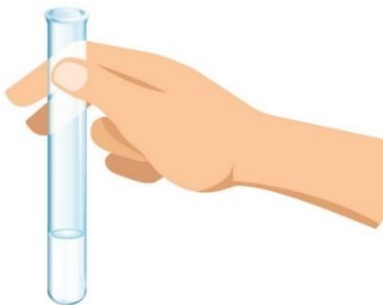
- Read the food labels carefully to check the ingredients and health reminders. It is not advisable to choose food which tastes spicy or pungent.

2.10 Learning and Teaching Activities Involving the Use of Chemicals/Glassware

2.10.1 Points to note when using chemicals in demonstration of science inquiry activities

Stay particularly vigilant when using chemicals in demonstration. It is important to recognize the potential hazards of each science inquiry activity and take proper precautions accordingly.

2.10.2 Common Glassware

Test tube	● Use test tubes made of heat-resistant glass which are suitable for science inquiry activities. ● Hold the upper part of a test tube with the thumb, middle finger and index finger (as shown below). Do not point the mouth of the test tube towards oneself or others.  Holding a test tube with three fingers ● Do not pour chemical liquids from a large container into a test tube. ● The substance or liquid contained in a test tube should not exceed $\frac{2}{3}$ of its capacity. If heating is needed, the volume should not exceed $\frac{1}{3}$ of its capacity. ● During heating, hold the upper part of the test tube at an angle of about 30° with a test tube holder. Place the test tube above the heat source and move back and forth gently. Point the test tube
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	mouth to a position without anyone. ● Put all test tubes on a test tube rack except during heating. ● Do not clean test tubes right after heating to prevent them from cracking under drastic cooling. ● After cooling, wash the test tubes with water and detergent with the aid of a test tube brush. Allow them to dry on a test tube rack.
Beaker	● Use beakers which are made of heat-resistant glass and suitable for science inquiry activities. ● Put heated beakers on a fireproof mat for identification. ● Do not touch heated beakers directly with bare hands. Use heat resistant gloves or dry towels if necessary. ● During heating, the liquid contained should not exceed 1/3 of the capacity of the beaker.
Measuring Cylinder	● Do not use measuring cylinders for heating or containing hot liquids.
Reagent Bottle	● Before taking or placing chemicals, read the label first and confirm the names before taking it. ● Never pour residual chemicals / reagents back into reagent bottles after activities to avoid contamination of chemicals in the reagent bottles.
Glass Rod	● Glass rods are designed for mixing and applying liquids. ● When not in use, place glass rods flat on the bench or serve in a beaker. Do not allow them to roll.

2.10.3 Points to Note when Using or Handling Glassware

- If the science inquiry activity does not involve heating or the use of organic solvent, plastic apparatus (e.g. plastic beakers or droppers) could be used as substitutes in order to reduce the risk of injuries from glass debris when the apparatus shatters.



Graduated plastic dropper



Plastic beaker

- **Never allow students to touch the broken glass.** Do not pick up debris with bare hands, remove any debris with forceps.
- Glass debris should be securely packaged and disposed of appropriately. **Do not put it into a general rubbish bin without proper packaging.**

2.10.4 Transferring liquid Chemicals

- Draw liquid chemical from a reagent bottle with graduated plastic or glass droppers.



Graduated plastic dropper



Glass dropper

- Use a **minimum amount** of chemical that could achieve the desired results and objectives.
- Do not pour any excess chemicals back into the reagent bottles to avoid contamination. Details on the disposal of chemicals could be found in Chapter 3.3.

2.11 Learning and Teaching Activities Involving Animals

2.11.1 Points to Note When Observing Animals

- When observing animals, keep a proper distance. **Never** stay too close to the animals. To avoid accidents, remind students not to touch animals or scare them.

1. If it is necessary to touch animals, wear disposable gloves to avoid infection by viruses, bacteria or parasites. After the activity, clean all bench surfaces with disinfectant and wash hands thoroughly.
2. If bitten or scratched by animals, administer first aid immediately. Before handling any wounds, wear disposable plastic gloves. The casualty should be sent to hospital for medical treatment. The animals involved should be isolated (if possible) as subsequent diagnosis of them may be required.

2.11.2 Points to Note When Keeping Animals

- Do not capture wild animals or purchase endangered species for keeping.
- Schools should avoid keeping birds and mammals as far as possible. Do not keep any violent animals.
- If it is necessary to use animals for teaching purposes, users have the responsibilities to treat them with respect and value their welfare. Provide the animals with sufficient and suitable food on a regular basis and clean drinkable water.
- Handle animal faeces properly. Do not assign students to handle them.
- It is not advisable to keep an excessive number of animals. Restriction of activities of animals for a prolonged period should be avoided. Ensure that animals are kept in a suitable and hygienic environment (including the size of cages or pens, temperature, humidity, ventilation, the density of living, community structure, etc.). Clean and sterilize the living space of animals regularly.
- Ensure that the animals kept are under proper care during school holidays.
- Monitor the kept animals frequently and pay attention to their health conditions. Handle sick animals carefully to avoid transmission of communicable diseases.
- Electrical devices used for aquariums or fish ponds should comply with safety standards and should be inspected and maintained regularly. If an electrical device installed in an aquarium (e.g. air pump or heating tube) shows signs of abnormal operation (e.g. difficult to switch on, producing excessive noise or overheating), stop using it immediately.
- Do not assign students to clean aquariums or fish ponds.
- In accordance with the guidelines and regulations of the HKSAR Government, prompt and hygienic methods should be used for the disposal of any dead animal

bodies.

- A set of complete control measures should be devised to ensure the healthy growth of animals and avoid epidemics. Schools can invite registered veterinary surgeons to assist the formulation of relevant plans or contact the Agriculture, Fisheries and Conservation Department, HKSAR for enquiries.

2.11.3 Activities Involving Micro-organisms

- Some people are allergic to mould spores. Science inquiry activities involving bread or fruit mould should be conducted carefully and any samples should be kept in suitable containers. It is recommended to store the relevant bread or fruit samples in double-sealed resealable plastic bags, allow the microorganisms to grow naturally in the bread or fruit and remind students **not to** open the resealable bags to reduce health risks due to touching or inhaling mould spores.
- Cultures of microorganisms could be contaminated by pathogens or become virulent as a result of mutation. If aerosols above the cultures are inhaled, contaminated food is ingested, or wounded body surface is in direct contact with the cultures, microorganisms may infect the human body and cause diseases. Therefore, all microorganisms and their cultures should be treated as hazards and handle with care. **Never** culture microorganisms using sewage, human mucus, pus, samples from toilet seats, faeces, etc. as such samples might be pathogenic.
- Hygienic measures should be emphasized when conducting such science inquiry activities. Protective gloves should be worn. If there is a wound on the body surface, it should be covered properly with sterile dressings before science inquiry activities.
- Before disposal, unwanted cultures must be immersed in liquid disinfectant for several hours to kill all microorganisms. All apparatus contaminated by microorganisms or other wastes should also be treated in the same way. Before and after science inquiry activities, the bench surface should be cleaned with disinfectant (e.g. 70% alcohol or 1:10 household bleach solution).
- After science inquiry activities, students and teachers must wash their hands thoroughly with liquid soap and water. Paper towels are preferred for drying hands and the used ones should be disposed of in a lidded rubbish bin.

2.12 Learning and Teaching Activities Involving Plants

2.12.1 Points to Note When Observing Plants

- Do not allow students who are allergic to pollen handle flowers. To avoid causing allergy, remind students not to put flowers near their noses.
- No students should be allowed to touch plants which contain irritants, for example, alocasia (*Alocasia macrorrhizos*), crown-of-thorns (*Euphorbia milii*), poinsettia (*Euphorbia pulcherrima*), oleander (*Nerium Oleander*), milk-bush (*Euphorbia tirucalli*), milky mangrove (*Excoecaria agallocha*), sumac (*Rhus chinensis* or *Rhus hypoleuca*), wax tree (*Rhus succedanea*), narcissus (*Narcissus tazetta*), yellow oleander (*Thevetia peruviana*), periwinkle (*Catharanthus rosea*), Cerbera (*Cerbera manghas*), lantana (*Lantana camara*) and sorrel (*Oxalis corniculata*). For details of poisonous plants in Hong Kong, please refer to the [*“Atlas of Poisonous Plants in Hong Kong”*](#), which is compiled by the [*Hospital Authority*](#).
- Some plants have sharp thorns or teeth. Pay attention to safety matters when observing and handling them.
- During science inquiry activities of observation of dissected flower/fruit structures, the flowers/fruits could be dissected and contained in a sealed plastic bag in advance in order to save time.
- Do not use any parts of plants for experiments involving taste or smell to avoid allergy or poisoning.

2.12.2 Points to Note When Growing Plants

Seed	● Some seeds may be poisonous or coated with toxic mould-proof agents. Wear protective gloves when handling seeds.
Garden Implement	● Keep garden implements properly. No students should be allowed to use shears.
Flower Pot	● Do not put flower pots on railings to avoid accidents when they fall. ● Stagnant water underneath flower pots should be cleared frequently to avoid mosquito breeding.
Potting Mix	● Wear protective gloves when handling potting mix. ● Pay attention to the storage environment to avoid small animals hiding inside or microorganisms growing.
Fertilizer	● Wear protective gloves when handling fertilizer. ● Pay attention to environmental hygiene during storage and use to avoid odour spillage. ● Fertilizer should be used according to the instructions as specified. Excessive use of fertilizer is not encouraged. ● No students should be allowed to handle and apply chemical pesticides.
Pesticide	If it is necessary to apply chemical pesticides, schools must arrange appropriate personnel to be responsible, and pay attention to the following matters: ● Users are recommended to wear face masks. ● Wear plastic protective gloves when handling and applying pesticides. ● Use pesticides according to the specified instructions. ● A hazard warning label should be affixed to the pesticide container (including sprays) to indicate that it is toxic. ● When spraying pesticides, pay attention to wind directions to avoid affecting people nearby. ● After spraying pesticides, all potentially affected skin areas should be cleaned thoroughly.
Irrigation	● Use clean water for irrigation.

2.12.3 Points to Note to Hydroponic and Aquaponics Farming

- The irrigating water for hydroponic should be filtered or changed regularly.
- For the aquaponics, the water from the fish tanks should not be contacted with the plants; the water from the fish tanks should be filtered and purified before used for irrigation.
- The harvested plants from the hydroponic and aquaponics might have potential risks of microbial contamination and should not be eaten directly by students.
- Students should avoid touching their noses and mouths with their hands during activities, and must clean their hands immediately after activities.

2.13 Learning and Teaching Activities Involving the Use of Other Tools, Instruments and Devices

2.13.1 General Principles

- Students should only be allowed to conduct activities when it is safe to do so. If tools are to be used, students' ability to use those tools should be considered. Teachers should give demonstration and guidance.
- Before using any tools or instruments, teachers should read the safety warnings and all instructions on the instruction manual or packaging box carefully.
- It is essential to establish regulations and procedures to prevent the unauthorized use of machines, such as restricting the power supply to machines and covering them. These procedures should be documented, displayed and made known to relevant staff.
- The key to prevent accidents is to teach students to exercise caution when using tools, as well as maintaining good discipline and a tidy environment. During demonstrations, teachers should explain relevant safety precautions to help students use the tools properly.
- Teachers should make every effort to minimize the need for students to carry tools around. If it is necessary to do so, any sharp ends should be pointed downwards to minimize the risk of hurting others.

2.13.2 Sharp Tools

- It is not advisable to use equipment which is too sharp or bulky, or those which could cause accidents easily, neither the tools which are blunt, rusted nor not in a good condition.
- The necessity to use sharp tools and cutting tools should be considered carefully. If necessary, it is recommended to use tools with retractable blades and suitable safety locks. Teachers should also consider providing already-cut materials or protective tools so as to lower the risk of injury from using cutting tools.
- Adopt suitable preventive measures to avoid injury when using sharp objects (e.g. needles or pins). For example put spare pins in a container and wrap them properly with paper when disposing of them.
- If it is necessary for students to use sharp objects during science inquiry activities, teachers should teach them how to use them properly and safely beforehand to prevent injury. Besides, teachers should remind students not to play with sharp tools, such as scissors and paper cutters. They should not move around while holding sharp tools. When using sharp tools, they should keep a proper distance from others.
- Place a board underneath when cutting objects to prevent any sharp tools from injuring students and damaging the bench surface in case of slippage. When using sharp tools, never put any body parts (e.g. fingers) within the cutting area of tools where the sharp parts (e.g. scissors, knives) are directed. For more safety notes on using sharp tools, refer to the latest versions of [*“Guidelines on Safety for Visual Arts in Primary Schools”*](#) and [*“Safety in School Workshops”*](#) issued by the [*Education Bureau*](#), HKSAR.

2.13.3 Copper Wire and Other Metal Wires

- If it is necessary to use metal wires in an activity, pay attention to the two ends to avoid injury from the sharp cuts, such as wrapping both ends with a small amount of clay or adhesive tape.

2.13.4 Glue Gun

- Glue guns with certification of double insulation must be used. It is advisable to use glue guns with obvious illuminating signs/switches to remind users when heating is in progress. For details on safety guidelines on the choice and usage of electrical appliances, refer to section 2.3.

- Teachers should remind students to put on cotton gloves or other heat-resistant gloves. Students should use a glue gun only when supervised by adult(s).
- Check if a glue gun is in a good condition before use.
- Do not leave a glue gun unattended once it is switched on. Otherwise, switch it off. When not using it temporarily, place it on a safe and appropriate stand with a mat underneath to prevent the molten glue from damaging the bench surface or hurting students accidentally.
- Pressing the hand trigger too hard could block the nozzle. It is recommended to stop pressing and let the glue stick melt. Afterwards, rotate the glue stick slowly and pull it out.
- Beware of the molten glue and the nozzle as their temperatures are high. If the skin is accidentally stuck with molten glue, rinse the affected area with running water to lower the temperature as soon as possible and seek proper treatment.

2.13.5 Adhesives

- Adopt the least risky type of adhesive. Toxicity, irritation and flammability should be considered when using. Avoid using liquid instant adhesive as far as possible as its splashes may get into the eyes accidentally.
- Whenever handling adhesives, wear appropriate protective gloves and ensure good/adequate ventilation indoors.
- Manufacturer's instructions must be followed. Store adhesives in containers with clear labels and keep them in areas not accessible by students.
- Hands should be cleaned thoroughly after using resins and adhesives to avoid inflammation or chemical allergy.

2.13.6 Cutting with Hot Wire

- It is recommended to cut styrofoam (expanded polystyrene) without heating.
- Hot wire-cutter should be operated by teachers in a well-ventilated area. **Never** heat or burn plastics bags or styrofoam (contains polystyrene) because these materials could produce poisonous gas when heated.

2.13.7 Safety Guidelines for Using Light Microscopes (Microscopes)

Microscope use and operation

- Before using the microscopes, teachers should explain in detail the names and usage of each component, as well as the safety precautions during operation.
- When moving the microscopes, hold them steady to avoid them from falling or tipping over due to bumps. Place the microscopes gently on the benches, but do not put them down too heavily.
- Before observing under microscopes, the reflected light of the microscope light/reflector should be adjusted to a darker state to avoid direct exposure of the eyes to strong light.
- When observing a sample placed on the microscope stage with the eyes, should maintain a safe distance and not put your head directly close to the microscope.
- Tools used to assist observation should be operated with concentration and handled with caution.
- When observing, first use a low-power lens to find the focus, then switch to a high-power lens for observation. Do not observe directly with a high-power lens to prevent the sample or slide from colliding with the lens.
- After observing the sample, screw the low-power lens back to its original position and cover it with the dust cover.

Microscope slide handling

- Handle specimens with care and be careful when placing and removing slides to prevent them from breaking and pricking fingers.
- Be careful when handling the slides to avoid them falling and breaking.
- Do not touch the slide sample directly with hands, only operate through the microscope when observing.
- When placing the slides on the microscope stage, place them firmly and do not move the slides.
- After observation, remove the slides immediately to avoid crushing them.
- Used slides should be put back into the slide box and should not be placed randomly.

Safety and supervision

- The use of microscopes in class must be supervised by teachers, and students must take turns using one microscope during observation, and avoid crowding.
- Students must report any anomalies or incidents (such as cracked or stained slides) to teachers immediately.
- Return the microscopes to the designated storage location after use.

2.13.8 3D Printers

- Schools must follow the safety measures provided by the manufacturers and make sure that the installation and repair of the equipment and devices of the 3D printer(s) are conducted by qualified or trained personnel and that their inspection and maintenance are regularly performed.
- At primary level, it is recommended to use common 3D printers for thermoplastics (e.g. fused deposition modelling (FDM)/Fused filament fabrication (FFF)). Other types of 3D printers with more risky procedures are not recommended. For example, users of binder jetting (BJ) 3D printers are at risk of inhalation of powdered printing materials; Stereo Lithography Apparatus (SLA) 3D printers involve flammable chemicals and ultraviolet lamp(s) in post-printing processing, uncured resin might cause skin injury, ultraviolet light might cause eye injury and the storage and usage of flammable articles, such as alcohol, etc., might also lead to fire hazards and health risks.
- During the printing process, toxic gases may be emitted as printing materials used in the 3D printers might contain additives and colourants. 3D printers should be installed in rooms equipped with exhaust systems.
- It is recommended to use 3D printers with a fully enclosed chamber and internal filter system.
- Risk assessment must be conducted prior to the installation and usage of 3D printers. Safety rules and safety measures against burns and scalds should be devised.
- 3D printers should be operated by trained personnel. **Schools should not allow students to operate them.**
- **Schools should adopt appropriate safety measures when using 3D printers:**
 - (a) When operating a 3D printer, keep the room well-ventilated.

- (b) Follow the guidelines listed in the operation manual.
- (c) Use specified non-toxic printing materials with good printability, such as PLA (Polylactic Acid). Do not use printing materials which release toxic gases and volatile organic compounds when heated, such as ABS plastics (Acrylonitrile-butadiene-styrene copolymer).
- (d) Printing materials should be replaced by qualified or trained personnel.
- (e) The heating parts (especially the print heads) may reach a temperature of 200°C or above. Avoid touching them at any time to prevent burns and scalds.
- (f) Do not put any body parts into a 3D printer in operation.
- The edges of the printed products may be sharp. Teachers should give appropriate prompts when returning the products to students.

2.13.9 Small Unmanned Aircraft (SUA)

- The administrator who should be nominated by the school has the responsibility to put in place an administrative, control and safety oversight mechanism for ensuring the Unmanned Aircraft Systems operations are safe and in compliance with the conditions and all other requirements set forth in [*"The Small Unmanned Aircraft Order" \(SUA Order\)*](#), [*Gazette Notice on "Specification of Parameters for Operating Requirements"*](#), [*"Guidelines for Small Unmanned Aircraft Operations within School Premises"*](#) and other related advisory circulars.
- The administrator who nominated by the school has the overall responsibility for the operations, and shall be accountable for ensuring that no person and property would be endangered by the SUA.
- The administrator should ensure the necessary risk assessment is conducted prior to each operation. Corresponding risk mitigation and emergency procedures (in case of a fire or battery explosion, loss of command and control link, bodily injury and etc.) should be established and adhered to during operation.
- The drone that school operations are conducted with a Category A1 Aircraft (its weight does not exceed 250 grams at all times during the flight) and A2 Aircraft (its weight exceeds 250 grams at any time during the flight but does not exceed 7 kilograms at all times during the flight) under [*"The Small Unmanned Aircraft Order" \(SUA Order\)*](#).
- The drone is operated for the flight for educational or research purposes only.

- The drone can only be used wholly within the school premises of a designated school. The remote pilot of the drone must also be within the same school premises of the school at all times during the flight.
- The drone operator shall be on site and keep the drone within “Visual Line of Sight” during the period of the flight.
- The specified number of unmanned aircraft no more than which the remote pilot of the aircraft for the flight operates is one.
- The drone is not carrying any dangerous goods at any time during the flight.
- Under no circumstances should anything fall from the drone during flight.
- For a Category A2 Aircraft, the drone must be [registered \(https://esua.cad.gov.hk/\)](https://esua.cad.gov.hk/) and labelled.
- The operation of the drone shall be conducted during daylight hours only. Daylight hours mean the time from half an hour before sunrise until half an hour after sunset (both points of time exclusive). Sunrise and sunset are determined at surface level. (With reference to the definition of “day” in the [Air Navigation \(Hong Kong\) Order, Chapter 448C.](#))
- The specified dimension of which the drone (including everything installed in, carried by or attached to the aircraft) does not exceed at all times during the flight is 1m, except that the longest distance between any two rotor blade tips can be up to 1.2m.
- The flying altitude of the drone is not higher than the flight altitude specified in the Gazette Notice at any time during the flight.
- The flying site of the drone should be selected in an open area on the campus (such as playground), and it must be flown clear of persons, objects or facilities that may cause danger.
- The flying altitude of the aircraft is not higher than the flight altitude specified in the *Gazette Notice* ([SUA Order](#)) at any time during the flight. The specified flying altitude not higher than which the drone is operated for a flight is 100 feet (about 30 m) above ground level for Category A1 Aircraft and 300 feet (about 90 m) above ground level for Category A2 Aircraft.
- The specified flying speed of the drone at which the aircraft does not exceed for a flight is 20 kilometres per hour (km/hr) for Category A1 Aircraft, and 50 km/hr for Category A2 Aircraft.

- The specified distance between which, the SUA which is a Category A1 Aircraft and any person, vehicle or structure that is not involved in the flight operations, measured horizontally and at any altitude, is not less than, is 10 metres (m).
- The specified distance between which, the SUA which is a Category A2 Aircraft and any person, vehicle or structure that is not involved in the flight operations, measured horizontally and at any altitude is not less than, is 10 m (with the flying speed of the aircraft not exceeding 20 km/hr) or 30 m (with the flying speed of the aircraft exceeding 20 km/hr but not exceeding 50 km/hr).

Incident Recording and Reporting:

Part of the guidelines is extracted from the [*“Guidelines for Small Unmanned Aircraft Operations within School Premises”*](#) for the teachers’ reference.

- In addition to prevailing reporting requirements specified by the EDB, the administrator should keep a record of any injuries in relation to the school operations.
- In case of any incidents regarding the school operations in which the SUA has exited the school premises and caused death or bodily harm of any persons, the teaching or supervising staff on site shall immediately report the case to the Police, followed by an email notification to the CAD Unmanned Aircraft Office at sua@cad.gov.hk.
- **Within 24 hours of the accident or incident**, the administrator shall provide details of the circumstances with preliminary findings in writing to the CAD Unmanned Aircraft Office by email to sua@cad.gov.hk.
- Within **3 calendar days** from the accident or incident, the administrator shall submit a full investigation report by email to sua@cad.gov.hk.

Remarks:

- For details of [*Safety Requirements Document and Relevant Guidelines*](#) and [*General Safety Guidelines for Flying SUA*](#), please refer to the [*“Small Unmanned Aircraft Order \(Cap.448G\)”*](#) on the website of Civil Aviation Department.
- For enquiries, please contact the Unmanned Aircraft Office of the Civil Aviation Department at sua@cad.gov.hk.



3

Storage and Disposal of Chemicals and Related Equipment

CHAPTER 3 STORAGE AND DISPOSAL OF CHEMICALS AND RELATED EQUIPMENT

3.1 Procurement and Storage of Chemicals

- When purchasing chemicals, assess the associated danger of usage and storage. Avoid excessive purchase and storage. The quantity of dangerous goods stored in school premises should not exceed the exempt quantity or the aggregate quantity specified in the Dangerous Goods (Application and Exemption) Regulation 2012 (Cap. 295, section 5 (L.N. 5 of 2022 [31 March 2022]). For details, please refer to the website of the [Hong Kong Fire Services Department](https://es.hkfsd.gov.hk/dg/en/) (<https://es.hkfsd.gov.hk/dg/en/>) and Chapter 3.4.1 of the [School Administration Guide](#).
- If necessary, store chemicals on a secure shelf or in a locked cupboard located in a locked storeroom. The key(s) to the storeroom and cupboard should be kept by the teacher-in-charge. Do not place chemicals at a high position on shelves to avoid accidental falling when they are retrieved.
- All reagent bottles should be labelled clearly and correctly with expiry dates to minimise the risk due to prolonged storage of chemicals. Replace any damaged and blurred labels immediately.
- For names, recommended quantities of storage and hazard warning labels of commonly used chemicals in Primary Science, **please refer to the table attached**.
- There should be regular inspection on chemicals (e.g. every 3 to 6 months) to check for irregularity and expiration. If any problems arise, the chemicals should be replaced immediately and disposed of properly (please refer to Chapter 3.3).
- Schools should prepare a clear and updated inventory of chemical stocks of Primary Science with their locations. The inventory should be updated regularly (e.g. annually).
- Schools should not store excess flammable liquids. Flammable liquids should be stored in a cool place away from sunlight, heat sources or power sources (including dry cells). Flammable liquids should be stored in suitable containers and clearly labelled as “Flammable Substances 易燃物品”. Such containers should be stored at locations not easily accessible by students. Schools should not store harmful or potentially dangerous gases.

- All chemicals, especially flammable items, should not be stored in household refrigerators. Sparks may be initiated when the thermostat controls and door-switches are operating, which might ignite the vapour of the flammable liquid and cause explosion.

 **Table : Names, recommended quantities of storage and corresponding hazard warning labels of commonly used chemicals in Primary Science**

Name	Storage quantities	Hazard warning symbols
Alcohol (Ethanol, for alcohol lamp) (Effective concentration: 95%)	Up to 1 litre	 
Alcohol (Ethanol or isopropanol, for sterilization) (Effective concentration range: 60-80%)	Up to ½ litre	
Iodine solution	1 small bottle	
Hydrogencarbonate indicator	Up to 1 litre	---
Lime water (Dilute calcium hydroxide solution)	Up to 2 litres	---

3.2 Storage of Instruments and Articles for Science Inquiry

- Check all instruments and articles regularly. Replace any broken or damaged ones immediately.
- Return equipment and articles after use to avoid loss or danger.
- Use heat-resistant gloves to handle instruments with high temperatures. Put a fireproof mat on a plastic tray when delivering hot instruments.
- It is not advisable to stack fragile instruments or articles to avoid breakage from pressure.

3.3 Disposal of Common Chemicals / Reagents

- Never pour residual chemicals back into reagent bottles after activities to avoid contamination of chemicals in the bottles.
- Collect all solid wastes (e.g. used cotton, tissues and gloves) from science inquiry activities and seal them in plastic bags before disposal.
- Teachers should always use plastic trays to hold instruments or containers which contain hot water or chemicals.
- If there is a sink in a classroom or Primary Science Room, liquid waste (including hot water) from science inquiry activities should first be poured into the sink, and then slowly rinse the sink with running water to ensure no residual remains in the sink. Otherwise, teachers should treat the wastes in the same manner in a sink at their convenience.
- When treating liquid wastes with sediment, filter the mixture before pouring the liquid into the sink to avoid clogging.
- If a liquid emits irritating odour, ensure the room is well-ventilated. Then, seek a suitable solution according to the properties of the chemical(s) concerned. Besides, do not pour such liquids into the sink inside a classroom to avoid causing discomfort to students.
- If there is an accident, the school should take immediate action to ensure students' safety. The school should observe the condition of the injured student closely and provide first aid treatment to the student as far as practicable until a

satisfactory recovery is achieved or the student is taken care of by medical professional. If the student is seriously injured or the condition of the student is deteriorating, or further medical treatment is required, the school should activate its crisis management mechanism to exercise professional judgement and decide on the appropriate course of actions. Due priority should be given to the safety of students. If there is doubt on the degree of the student's injury, the case should be handled as a serious accident. Any patient who losses consciousness should be evacuated to hospital immediately.

Remarks:

- For more information on laboratory safety related to science inquiry activities, please refer to the latest version of [*Safety in Science Laboratories*](#) compiled by the Education Bureau and the [*"Laboratory Safety and Management in Secondary Schools \(EDBCM No.132/2022\)"*](#), and the updated versions that may be issued from time to time.
- For information on the properties of common chemicals, please refer to Material Safety Data Sheet (MSDS), which could be obtained from the chemicals suppliers or retrieved from the Internet.



Life-wide Learning Activities

CHAPTER 4 LIFE-WIDE LEARNING ACTIVITIES

4.1 Meaning of Life-wide Learning Activities

Life-wide Learning complements the implementation of the Primary Science curriculum by extending students' learning beyond the classroom and helping them integrate and apply knowledge, skills and values across key learning areas. Teachers should make good use of community resources provided by government departments and other organisations, as well as study opportunities outside HKSAR, to facilitate students' learning in an authentic context and enrich their learning experiences.

4.2 Outdoor Visits and Field Studies within HKSAR

Prior to organising activities, schools should have a comprehensive plan to help student participants understand clearly the nature and contents of the activities. The safety of students should be the prime and foremost concern when organising outdoor activities. Collaborative efforts among teaching staff is required to achieve the expected learning targets. Different safety regulations are set out for the planning and implementation of different types of outdoor activities, and there are common guidelines applicable to all types of activities. Before an activity, teachers should understand it every detail, means of transport and relevant safety facilities, and devise contingency plans accordingly. Safety issues on outdoor visits and fieldwork activities have been detailed in the [*Guidelines on Outdoor Activities \(2023\)*](#) published by [*Education Bureau*](#). Its content could be updated as necessary.

Part of the guidelines is extracted from [*Guidelines on Outdoor Activities \(2023\)*](#) here for teachers' reference.

4.2.1 Notes for Heads of Schools

- Schools should ensure that teachers/instructors¹ responsible for planning and leading the activities possess the qualifications required for giving guidance to participants during the conduct of activities. Teachers/Instructors should be encouraged to receive first aid training and attend refresher training courses every three years so that there will be sufficient persons with first aid training to serve as leaders of outdoor activities.
- To facilitate organisation and management, participants of an outdoor activity may be divided into groups. Teachers, senior form students or other adults with relevant experience and knowledge can be appointed as group leaders.
- It is the responsibility of schools to ensure that participants are physically fit and equipped with the necessary skills to take part in the activities. Consent should be obtained from parents of the participants beforehand. Parents should assess the physical fitness of their children and consult doctors when necessary before the conduct of activities to ensure their children's suitability to participate.
- Schools should make sure that all participants including teachers / instructors / group leaders thoroughly understand their roles and responsibilities in the event of emergency.
- During the conduct of outdoor activities, teachers/instructors should bring along a first aid kit (please refer to Appendix II of the *"Guidelines on Outdoor Activities"* for a list of suggested items) and personal communication devices (such as mobile phones) for treatment of injuries and external communication in the event of emergency.
- When an accident occurs, schools should take immediate actions and notify the parents or family members of the injured student(s) as soon as possible. The accident should be reported to the police immediately if necessary. Details of the accident should also be recorded (please refer to Appendix VII of the *"Guidelines on Outdoor Activities"* for samples)
- Before the conduct of outdoor activities, schools should follow the proper procedures and notify the police and relevant government departments (please refer to Appendix IV of the *"Guidelines on Outdoor Activities"* for procedures). Requirements stipulated in relevant circulars and guidelines issued by Education Bureau should also be observed (please refer to Appendix IX of the *"Guidelines*

¹ An instructor is a person who is qualified as a coach or trainer in a particular activity.

on Outdoor Activities”).

- Teachers/Instructors who do not physically participate in the activities should be designated to take charge of communication and supervision during the course of activities. They should:
 - (a) maintain liaison and communication with parties related to the outdoor activities;
 - (b) have good knowledge of the details and logistics of the outdoor activities organised by the school, such as the nature, time and location of activity, as well as contact numbers of the teachers/instructors leading the activity; and answer enquiries from outsiders or parents;
 - (c) inform the management or designated person(s) of the school according to the agreed contingency plan and, if necessary, assist the school in contacting parents, collaborators or government departments in the event of emergency;
 - (d) maintain vigilance during the course of activity by paying attention to news reports and changes in weather conditions, and monitor the progress of the activity, so that the school and the teachers/instructors leading the activity can be updated timely and accordingly; and
 - (e) report to the police in case no notification about the completion of activity is received at the scheduled time from the teachers/instructors leading the activity.
- Schools should make sure that all students, with or without special educational needs, are given equal opportunities to participate in outdoor activities if circumstances permit. Moreover, schools should provide students with special educational needs the assistance they need. For example, “identification and SOS cards” should be specially prepared for students with intellectual disability to carry along during outdoor activities (schools implementing integrated education may refer to the “Manning Ratio for Outdoor Activities Involving Students with Special Educational Needs” suggested at Appendix X of the *“Guidelines on Outdoor Activities”*; and [*“Integrated Education and Special Education Information Online”*](#)).
- Heads of schools should read carefully the Education Bureau Circular on [*“Block Insurance Policy”*](#) to familiarise themselves with the clauses and coverage of any such policy and ensure the compliance with the guidelines and instructions therein. Moreover, schools should observe the following:

- (a) All teachers/instructors or other accompanying persons designated for an activity should be appointed by the school. Such appointment, and the programme, location and schedule of the activity must be approved by the school and put on record.
- (b) Queries, if any, about the coverage of the [*"Block Insurance Policy"*](#) should be clarified with the insurance company and the insurance company should be contacted immediately after the occurrence of an accident.
- For activities involving procurement of services, principals should carefully observe and follow the tendering and procurement procedures applicable to the category of their schools (please refer to Appendix IX of the *"Guidelines on Outdoor Activities"*).

4.2.2 Notes for Teachers/Instructors

- When schools conduct outdoor activities that are exploratory, challenging and physically demanding activity conducted in a natural environment, the party should comprise at least one member who has received first aid training. Teachers/Instructors are encouraged to receive first aid training arranged by the [*Hong Kong St. John Ambulance Association*](#), the [*Hong Kong Red Cross Society*](#), the [*Auxiliary Medical Service*](#) or [*Occupational Safety and Health Council*](#), and attend a refresher training course every three years.
- Teachers/Instructors should update themselves on the latest weather reports and forecasts.
- Teachers/Instructors should take note of the [*Air Quality Health Index*](#) within the activity area. For more information about the Index, please visit the following webpage of the [*Environmental Protection Department*](#). In case the Index has reached the "high", "very high" or "serious" level of health risk, schools may also refer to the "Dos and Don'ts for Arranging Physical Activities" and the related "Frequently Asked Questions" at Appendix XVI of the *"Guidelines on Outdoor Activities"*.
- All outdoor activities should be cancelled if a tropical cyclone warning is issued. If signal no. 1 is issued during the conduct of activity, participants should take immediate shelter in the nearest safe place. As long as circumstances permit, teachers/instructors should make arrangements for participants to return home. When a higher signal is issued, participants should stay at the nearest shelter until safety is no longer threatened by the wind.

- When a thunderstorm warning, a red/black rainstorm warning, or fire danger warning is issued, teachers/instructors should suspend all outdoor activities immediately and lead all participants to a safe place to take shelter until it is safe to return home. When a thunderstorm warning is issued before the conduct of activity, teachers/instructors should decide whether to postpone or cancel the activity, taking into consideration its nature, content and location.
- When a cold or very hot weather warning is issued, it is expected that cold or very hot conditions will persist. Teachers/Instructors should assess the situation and decide whether to postpone or cancel the activity. In cold weather, participants should be advised to put on warm clothing to prevent hypothermia. When the weather is hot or sunny, teachers/instructors should remind participants to take precautions against heatstroke and excessive exposure to UV radiation (please refer to appendices XIII and XIV of the *“Guidelines on Outdoor Activities”*).
- Schools should request parents to check the body temperature of their children on the day of activity and record such information in the form prepared by schools (please refer to Appendix XI of the *“Guidelines on Outdoor Activities”* for samples). Teachers/Instructors should then determine whether individual students are physically fit to participate in outdoor activities according to the information provided by parents. For camping or other outdoor activities that last several days, teachers/instructors should check students’ body temperature before the programme begins each day.
- Teachers/Instructors should observe the performance and behaviour of participants, and make sure that they do not engage in activities beyond their physical and mental capabilities. Participants should also be reminded to report any sickness immediately so that appropriate arrangements can be made.
- Teachers/mentors must develop a sense of responsibility among participants so that they understand their role in ensuring their own safety and the safety of teammates.
- Smoking or tampering with matches, lighters or inflammable materials is strictly forbidden while participating in outdoor activities.
- Teachers/Instructors should ensure that participants are properly dressed during outdoor activities (with suitable clothing and footwear). They should also have long hair tied back, fingernails properly trimmed and glasses secured.
- Teachers/Instructors should remind all participants to bring along their identity document, which may include adult or juvenile identity cards (for those aged above 15 and below 18).

- Teachers/Instructors should remind participants to take proper measures against mosquito or insect bites and hence prevent infectious diseases such as dengue fever. Participants are advised to:
 - (a) wear light-coloured clothing with long sleeves and long legs;
 - (b) apply insect repellent containing DEET on exposed parts of the body and clothing; and
 - (c) avoid staying too long in shade under trees, bushes, hidden sites or unmanaged areas.

For more information on [vector-borne diseases](#) (e.g. dengue fever), please visit the designated webpage of the [Centre for Health Protection](#).

- Teachers/Instructors should be aware of the potential hazards of the outdoor activities and the surrounding environment, and take appropriate precautions to ensure safety. Participants should be encouraged to report as soon as possible anything unusual or irregular that they detect.
- The following steps should be taken in case of accidents:
 - (a) Perform first aid as and when necessary, and avoid acting hastily if there is any doubt;
 - (b) Avoid moving the injured unless it is absolutely necessary. Send the injured to medical service immediately if circumstances permit, or have the help-seeker accompanied while awaiting rescue; and
 - (c) Make an initial record by completing the “Proforma for Recording Emergency” (please refer to Appendix VI of the *“Guidelines on Outdoor Activities”* for samples) for the reference of outside rescuers:
 - i. location of the injured (name of place, grid reference or the number of the nearest distance posts erected by the Agriculture, Fisheries and Conservation Department every 500 m along hiking trails);
 - ii. time of the accident;
 - iii. condition of the injured;
 - iv. brief particulars of the injured;
 - v. brief particulars of the informant; and
 - vi. number and condition of persons in the same team

- Persons handling a bleeding wound should wear plastic gloves to avoid direct contact with blood.

4.3 Study Tours Outside the HKSAR

Study tours outside the HKSAR refer to activities planned and organised by schools in which students, under the care of escorts appointed by schools, are arranged to take part in visits, exchange programmes, studies or services outside Hong Kong. [*“Guidelines on Study Tours Outside Hong Kong”*](#) are drawn up with the major aim of reminding schools to ensure the safety of participants of study tours. Schools should make reference to the curriculum guides on various Key Learning Areas to design suitable study tour programmes according to their school-based curriculum and students’ needs, including learning objectives and corresponding activities. Schools should make reference to the latest [*“Guidelines on Study Tours Outside Hong Kong”*](#), which is available on the [Education Bureau](#) website.

The following content is an excerpt from the [*“Guidelines on Study Tours Outside Hong Kong” \(2024\)*](#) and the [*Guidelines on Outdoor Activities \(2023\)*](#) for teachers’ reference.

4.3.1 Planning and Preparation

- Schools should make overall planning of study tours outside Hong Kong in light of their development priority and school-based circumstances, such as manpower arrangement, estimated expenditure, number of tours and schedule of other school activities.
- All escorts in the study tour should have experience in leading students’ outdoor activities or overseas visits, with at least one of them being a teacher of the school.
- At least one of the escorts or participants should have received training in first aid.

- Each study tour should be led by at least two escorts, with each escort² taking care of no more than 10 students³.
- Schools should maintain proper communication with teachers in assigning suitable teachers to escort students in exchange programmes and make appropriate teacher deployment with respect to the objectives and arrangements of each activity. Considering the flight schedule of individual tours and teachers' work schedule for the day immediately following their return to Hong Kong, schools should flexibly re-arrange the teaching schedules of the teachers concerned to allow enough rest before resumption of normal duties. Whenever necessary, schools may seek advice and instructions from their respective school management committees.
- Schools should consider the ability of participants⁴ when deciding the destination, itinerary, duration of the tour, etc., and stakeholders and parents should be consulted on the details to ensure that the activity can be conducted effectively.
- Schools should consider climate, accessibility, and condition of hygiene, language, accommodation and food when selecting the destination of the tour.
- Schools should avoid choosing potentially dangerous areas, such as political unrest, poor public order, epidemic disease outbreaks, threats of earthquake or frequent occurrence of typhoons and flood.
- Schools should draw up contingency plans (e.g. procedures to deal with delay or cancellation of the tour because of changes in weather conditions, Air Quality Index/air pollution level (as appropriate), political environment or transportation; participants who back out midway; or accidents) in advance, and inform all students and their parents of such plans. Schools should also set up an emergency notification system with parents and collaborators/host organisations so that different parties can be reached any time.
- Itinerary-related information, such as the addresses and telephone numbers of the lodging places; location of local police stations, hospitals, clinics or first-aid units; and emergency numbers for rescue services in places covered by the

² Apart from school teacher(s)/staff, escort(s) may also include adult(s) appointed by the school, such as parents and alumni. Escorts should understand thoroughly the nature of the activity and be aware of the problems that are likely to arise. They should also undertake to take care of and supervise the students during the conduct of activities and in daily living.

³ For the manning ratio for special schools, please refer to Appendix X of the "Guidelines on Outdoor Activities": "Manning Ratio for Outdoor Activities Involving Students with Special Educational Needs" and make appropriate arrangements.

⁴ Participants generally refer to all members of a study tour.

itinerary, should be collected. Before the trip, such information may be given to parents and the responsible person staying in the school for emergency use.

- Schools should organise a briefing session to inform students, parents and accompanying members of the details of the tour, responsibilities of each party and school rules that students and parents are expected to follow. Students should be reminded of the need to follow the escorts' instructions and observe all safety regulations throughout the trip.
- Pre-tour training preferably covering the following areas should be provided as far as possible:
 - (a) orientation;
 - (b) team spirit;
 - (c) discipline;
 - (d) manners and behaviour;
 - (e) safety measures – protection against mosquito bites, fire precaution and escape, proper use of electrical appliances, food hygiene, road safety, protection of personal belongings, actions to be taken when going astray or getting injured, etc.;
 - (f) immigration (customs) procedures;
 - (g) luggage – clothing, medicine, cash, etc.;
 - (h) social customs and taboos of the place of visit;
 - (i) points to note for travelling abroad; and
 - (j) contingency plan
- Preferably two or more students should be assigned to the same room for better mutual care when allocating accommodation. Once the arrangement for accommodation is finalised, to avoid confusion, no student should be allowed to switch rooms without good justification.
- Schools should study and follow, as appropriate, the travellers' health advice on health risks and vaccinations given in the relevant website of the Department of Health.
- Schools should obtain from parents of each student a letter of prior consent and a health certificate and study the health condition of the students. If a participant feels unwell before setting off, the school or the escorts should advise the

participant to seriously consider whether it is wise to insist on joining given his/her health condition and to consult a doctor. If a participant shows symptoms of having contracted an infectious disease, it will be in the interest of the safety of the other group members that he/she should refrain from joining the tour.

- Schools should examine the validity of the travel documents held by participants at the earliest and, if necessary, check their certificates of immunisation. If their travel documents are not valid or the vaccination they have received does not satisfy the requirements laid down by the authorities of the place of visit, schools should remind the participants to take speedy actions accordingly.
- Each participant of the study tour should have appropriately taken out travel and medical insurance. Schools should remind parents to make their own purchase (including medical insurance, personal accident insurance and insurance covering costs for emergency service) in light of individual needs for enhanced protection. Alternatively, schools may take out relevant insurance for students/teachers on behalf of parents/teachers upon obtaining their consent; however, parents/teachers should be given full discretion in accepting such an arrangement.

4.3.2 Points to Note during Study Tours

- Escorts should pay attention to local weather forecasts and news broadcasts. If there is going to be any change in weather or other conditions, a contingency plan should be activated as soon as possible.
- Escorts should be fully aware of the health condition of each participant in order to determine which participants are fit to take part in the activity of the day. Timely and appropriate arrangements should be made on a case-by-case basis. Escorts should also arrange for any sick member to see the doctor as soon as possible. On the advice of the doctor, effective health measures should be taken to enable the recovery of the patient and prevent the other tour members from getting sick. If necessary, escorts should inform the parents and the school of the students' health condition as soon as possible.
- Escorts should bring along the necessary safety equipment for the tour, for example, a first aid kit, communication equipment (mobile phones) and torches.
- School can divide the students into small several groups, with each team supervised by an escort.
- The safety of the participants is the prime concern of the tour. Activities should preferably be conducted in one large group or in small teams so that no student

would be working alone. Escorts should advise students to have a copy of their travel documents with them for identification purpose where necessary. Moreover, if students detect anything suspicious/unusual, they should report it to their escorts as soon as possible.

- Participants should be fully briefed on the programme or schedule before commencement each day. Upon conclusion of activity that day, a debriefing session should be held to review participants' performance, programme arrangements and relevant safety measures, and preparations should be made for the activity of the following day.
- When travelling by any means of transport (including plane, vessel, train or motor vehicle), participants should stay alert, observe relevant safety regulations and look out for emergency escape routes or exits.
- Escorts should be aware of the speed of the vehicle in which they are travelling to ensure that it is within safety limits. They should express to the driver or host personnel their safety concerns when necessary. Moreover, escorts should ensure that the driver gets sufficient rest or works according to duty roster to avoid prolonged driving without breaks. It is not advisable to press ahead with the journey when the weather is bad or when the schedule is tight.
- After checking into a local hotel, students should immediately look out for the "fire escape route". They should also acquaint themselves with the exit direction, escape route and assembly point in case of emergency.
- Escorts should carry with them such information as the name list and hotel room numbers of their group members to facilitate assembly and a roll call. Participants should also be advised of the room numbers and telephone numbers of their escorts to facilitate communication.
- Escorts should always remind participants to take proper care of their travel documents and personal belongings.
- Participants should put the room key, a torch and any important articles in a handy place before going to bed, so that these can be snatched quickly even in the dark.
- Participants should pay attention to food hygiene and avoid consuming uncooked food and unboiled water. They should also avoid patronising unhygienic stalls or restaurants.
- Participants should wash their own clothing regularly and maintain good personal hygiene. They should avoid staying long in crowded or heavily polluted

places. If necessary, they should wear a mask to reduce the risk of being infected by bacteria or viruses.

- Each participant should wear a watch and take note of the time of assembly and return for all activities. They should arrive at the designated assembly point punctually as instructed.
- Participants should bring along clothing with long sleeves and long legs, mosquito repellent oil/cream, sunblock, etc. to prevent mosquito or insect bites and sunburn.
- If a student needs to leave the party temporarily, he/she should seek prior approval from the school through his/her parents. While away from the party, the student should be accompanied by a designated adult. The student should also inform the escorts and other members of the tour the place he/she is visiting, the expected time of return and the way of contact before return.
- Participants should make sure that they have sufficient time for rest and recovery and they are fit enough for the entire journey.
- Escorts should report regularly to the responsible person of the school staying in Hong Kong the condition of all tour members and the progress of the activities under the established reporting mechanism, so that the school is updated constantly and able to respond to parents' enquiries with the latest information.
- Under all circumstances, participants' absolute safety should be accorded the highest priority and in no way should this be compromised. If there are extraordinary situations that warrant the involvement of local authorities such as the police, escorts should act accordingly without delay.
- If assistance is needed during the tour, escorts should consider calling the 24-hour hotline (No.: +852 1868) operated by the [*Assistance to Hong Kong Residents Unit of the Immigration Department*](#).
- In the event of accident (e.g. traffic accident or fire), other emergencies (e.g. robbery or assault), injury or loss of life in the Mainland, the incident should be reported to the local public security authorities for action: dial 110 for police assistance; dial 120⁵ for ambulance service; dial 119 for fire service; and dial 122 for reporting a traffic accident.
- Hong Kong residents in need of help when abroad may contact the local Chinese diplomatic and consular missions for assistance and services. Hence, escorts

⁵ Fees are generally charged for medical services. Users need to pay for ambulance service, emergency treatment, etc.

should keep at hand the information of relevant Chinese diplomatic and consular mission(s).

4.3.3 Overall Considerations for Study Tours Outside HKSAR

- When devising safety measures, schools should refer to the above information and make necessary adjustments having regard to the nature of the tour, the ability/condition of the participants and the environment of the place of visit, so as to strike a balance between the objectives of the activity and the principle of safety.
- The [Security Bureau](#) of the Hong Kong Special Administrative Region Government has set up an [“Outbound Travel Alert”](#) (OTA) system on its website (Chinese Version Only) to promote understanding of the threats to personal safety in travelling to destinations that are popular among Hong Kong residents. Schools should exercise prudence and observe the OTA issued by the Security Bureau when planning study tours.
- The [Immigration Department](#) provides the [“Registration of Outbound Travel Information”](#) (ROTI) service on its website. Escorts (e.g. teacher leaders) may register their contact details and itinerary using this online service, which allows the Assistance to Hong Kong Residents Unit of the Immigration Department to reach members of the study tours and offer practical assistance in the event of emergency outside Hong Kong.
- Schools should make sure that all students, with or without disabilities, are given equal opportunities to participate in study tours if circumstances permit. Moreover, schools should provide students with disabilities with the assistance they need. For example, “identification and S.O.S. cards” should be specially prepared for students with intellectual disability to carry along, and their photographs and copies of their travel documents should be kept at hand by escorts for emergency use.
- Schools should read carefully the EDB circular memorandum on [“Block Insurance Policy”](#)⁶ (BIP) to familiarise themselves with the clauses and coverage of any such

⁶ The BIP does not provide comprehensive personal insurance coverage for students/teachers. If parents/teachers wish to have comprehensive personal insurance coverage for their children/themselves, e.g. travel insurance, life insurance, personal accident insurance, medical insurance or critical illness insurance, they may acquire it separately at their own cost from any insurance company. If it is considered necessary to take out additional group personal accident insurance for students/teachers participating in school activities, schools may do so on behalf of parents/teachers with their consent. However, parents/teachers should be given full discretion in accepting such an arrangement.

policy and ensure the compliance with the guidelines and instructions therein⁷. Generally speaking, the BIP does not provide comprehensive personal insurance coverage for students/teachers. If parents/teachers wish to have comprehensive personal insurance coverage, e.g. travel insurance, medical insurance, they may acquire it at their own cost as mentioned in Point 17 in Part I of the ["Guidelines on Study Tours Outside Hong Kong" \(2024\)](#) or schools may do so on behalf of parents/teachers with their consent. Moreover, schools are required to observe the following:

- (a) All escorts should be appointed by the school. Such appointments, and the programme, place and schedule of the visit must be approved by the school and put on record.
 - (b) Queries, if any, about the coverage of a policy should be clarified with the insurance company and the insurance company should be contacted immediately after the occurrence of an accident.
- Schools organising a study tour on their own or in collaboration with agents or overseas education institutions should make reference to Chapter 1 "Notes for Heads of Schools and Teachers/Instructors" and Chapter 2 "General Measures for Activities on Land" of the ["Guidelines on Outdoor Activities" \(2023\)](#) as well as the relevant circulars/letters issued by the EDB. Schools should also carefully observe and follow the tendering and procurement procedures applicable to the school category to which they belong.
- Schools may draw on the human resources of organisations inside the school, such as Parent-Teacher Association and alumni association, to organise activities. However, the organising work of study tours should be led by schools to ensure that the activities align with their school-based curriculum and cater for the needs of their students. Besides, schools should make good use of the resources provided by the EDB, such as the additional administrative manpower/resources for all public sector schools and schools under the Direct Subsidy Scheme (DSS schools) starting from the 2019/20 school year (i.e. those provided under the "One Executive Officer for Each School" policy) to strengthen their financial management and administrative support.
- If agents are commissioned to organise study tours outside Hong Kong according to applicable tendering and procurement procedures, the agents commissioned

⁷ If civil servants serving government schools are injured in accidents when participating in study tours outside Hong Kong, their schools should timely report and handle the cases according to the relevant Civil Service Regulations on duty-related injuries.

must be licensed travel agents, and the accompanying staff must be holders of a valid Tour Escort Pass issued by the Travel Industry Council of Hong Kong. In addition, to safeguard the interests of participants, schools may request the agent commissioned to produce a sexual conviction record of the accompanying staff, and provide such information as the age of the coaches allocated, the safety equipment on board and the drivers' driving history.

- For procurement of services from travel agents, schools should take into account the actual operations and possible incidents when drafting the contracts. Relevant provisions, such as specific requirements for itineraries and visits, mechanism for making changes to the itinerary, instalment arrangement, liability clauses for force majeure and refund arrangement due to the cancellation or delay of study tours, should be included to better protect the school's interests. Each school should seek its own independent legal advice and, where necessary, the advice of other relevant professionals, on the terms and conditions to be adopted in the invitation letters and written quotation/tender document/contract for each invitation of written quotation/tender exercise/contract preparation.
- [*The Travel Industry Council of Hong Kong*](#) has uploaded onto its website the [*"Code of Business Practice on Study Tours and Exchange Tours"*](#), which comprises points to note for organising study tours. Schools are advised to make reference to the Code before planning their study tours. Moreover, the Council offers Certificate Courses for Outbound Tour Escorts on a regular basis. Schools may consider making arrangements for their teachers to attend these courses in light of their needs. Relevant information can be accessed by visiting the following webpages:

(a) [*Code of Business Practice on Study Tours and Exchange Tours \(revised\)*](#)

(b) [*Certificate Course for Outbound Tour Escorts*](#)

4.4 Points to Note on Investigation, Data Collection and Interview Activities

- If students need to conduct outdoor data collection activities, such as collecting data at museums, institutions related to STEAM education or innovation and technology, or government departments, teachers should consider students' safety when travelling to and from destinations. Teachers should remind students to obtain parents' consent in advance and conduct such activities with the company of teachers, parents or other adults.

- Before carrying out the activity, teachers should provide students with relevant information and explanations, and arrange sufficient time for students to collect information. The information to be collected should also be in line with the students' abilities and levels.
- Teachers should consider the environment of the locations of investigation or interviews. If it is too remote or quiet, the traffic is too busy or the security is unsatisfactory, students should not conduct the activities on their own. To ensure safety, students should be accompanied by teachers or parents, and may change the schedules of activities according to the situations.
- Teachers should make students understand clearly the aims of the activities.
- Teachers should clearly state the interview areas. Without approval of teachers, students should not leave the designated area on their own or following interviewee.
- During the activity, avoid causing inconvenience or affecting others as far as possible.
- If the interviewees are strangers, students must be accompanied by teachers or parents.
- Before conducting interviews, the students should be reminded to obtain consents from interviewees, to be polite and respectful to the interviewees. Attention should be paid to the changes in interviewees' emotions, and the interview should not be conducted reluctantly.
- Students should comply with the management rules of the relevant venues or organisations when conducting investigative, data collection and interview activities.
- When taking photos or videos, consents from the interviewees or relevant organisations should be obtained in advance.

4.5 Relevant Guidelines and Other Suggestions

- When conducting such activities, schools should refer to the guidelines, circulars and leaflets issued by the Education Bureau and other related government departments. **Please refer to Appendix 3 for details.**
- On the parent notices of outdoor activities, schools should remind to bring along their student handbooks (with school chop) for identification in emergencies.

- It is advisable not to adopt a tight schedule, especially the first day of the trip. When the participants are exhausted, there is higher chance of falling sick.
- Parents should declare if there is any medical records of food allergy and drug allergy. Escorts or teachers could remind students with food allergy to avoid eating food with potential food allergens again before meals.
- Some persons who used products containing a high concentration of DEET or who were exposed to excessive amounts of DEET have experienced skin rashes, blisters, and skin and mucous membrane irritation. Pay attention to the tips by the [Centre of Health Protection](#) when choosing insect repellents.



5

Ways to Handle Accidents

CHAPTER 5 WAYS TO HANDLE ACCIDENTS

5.1 Points to Note on Handling Accidents

- Regulation 55(2) of the [*Education Regulations \(Chapter 279 Subsidiary Legislation A\)*](#) states that at least 2 teachers in every school shall be trained in administering first aid. Therefore, schools should encourage teachers to attend first aid training courses recognised by the HKSAR Government, including those offered by the [*Hong Kong St. John Ambulance Association*](#), the [*Hong Kong Red Cross Society*](#), the [*Auxiliary Medical Service*](#) or [*Occupational Safety and Health Council*](#). Also, they should receive refresher training every three years to ensure that injured students can receive appropriate care before the ambulancemen/ambulancewomen arrive. Moreover, schools should prepare first aid handbooks for the reference of teaching staff.
- When an accident occurs, stay calm and administer appropriate first aid.
- In the event of serious injury or suspected serious injury, request ambulance service by dialing 999 so that the injured could receive treatment as soon as possible.

5.2 First Aid Measures for Common Accidents

5.2.1 Handling Minor Heat Burns and Scalds

- Remove the casualty from the heat source. Reassure and comfort him/her.
- Rinse the injured part(s) with plenty of clean water for at least 10 minutes, or until the pain is alleviated. Then, dry the wound(s) and cover it/them with dry sterile gauze pad(s) or dressings and secure with bandage. Do not use adhesive dressings.
- Do not apply lotions, ointment or any other chemicals to the injured part(s).
- Do not break blisters, cough, or speak when facing the injured part(s), so as to avoid infection of the wound(s).
- To prevent further injury, immobilise the injured part(s) and avoid contacts as far

as possible to prevent scrapes.

- Seek medical treatment as necessary.

5.2.2 Handling Cuts and External Bleeding

- Reassure and comfort the casualty.
- Students should not be allowed to deal with the wounds of other classmates. Teachers should avoid direct contact with the wound(s) or blood with bare hands and should put on disposable plastic gloves before handling the wound(s).
- Inspect the wound(s) to check if there are any foreign objects. If not, direct pressure could be applied to stop bleeding. Apply direct pressure over sterile gauze pad(s) or clean dressings.
- Wash the wound(s) with clean water or antiseptic solution. Be cautious not to wipe off blood clots.
- Cover the wound(s) with appropriate dressings when bleeding has stopped.
- If there are any foreign objects, or when direct pressure fails, indirect methods could be used. Apply pressure around the injured parts, place dressings around to fix the positions of the foreign objects and stop bleeding. Seek medical treatment as soon as possible.
- In serious cases, lay patients down with the injured parts raised and supported (except cases of bone fractures). When it is impossible to evaluate if there is bone fracture, let the casualty try to lift the injured part on his/her own. If the injured limbs could be lifted, supports the lifted parts. To prevent injury of bone fractures from worsening, avoid moving the casualty unless there is immediate danger on the spot.
- Apply direct pressure to the wounds over clean gauze pads. If bleeding persists, apply another gauze pad on top of the first one and then apply bandage. Do not remove the original gauze pad (to avoid tearing off the blood clot). Afterwards, check the remote sensitivity to touch, temperature, mobility, etc. to avoid excessive tightening of bandage and hindering of blood circulation. Excessive blood loss may lead to shock. The casualty must be sent to hospitals for immediate medical treatment and notifications should not be delayed.
- Blood-contaminated materials should be handled with caution. The following precautions should be taken:

- Do not directly touch blood-contaminated materials with bare hands. Wear disposable plastic gloves.
- To handle obvious blood stain, use 1 in 4 diluted household bleach (such as mixing 10 mL of household bleach into 40 mL of water) to clean the contaminated areas.
- Blood-contaminated gloves, dressings and cotton wools, etc. should be suitably disposed.
- For preventive measures related to the blood-borne communicable diseases, schools could obtain guidelines and relevant health information from the website of the Centre of Health Protection, such as [Guidelines on Prevention of Communicable Diseases in Schools/Kinderqartens/Kinderqartens-cum-Child Care Centres/Child Care Centres](#).

5.2.3 Handling Eye Injuries

- **All eye injuries should be regarded as serious incidents.** The injured should be sent to hospital immediately for urgent medical treatment without delay.
- For eye injuries caused by chemicals, flush the eye(s) immediately with running water for at least 20 minutes or until the ambulanceman/ambulancewoman arrive, without splashing contaminated water into the uninjured eye. **Never** attempt to neutralise the chemicals in the injured eyes with acids or alkalis. Remind the injured not to rub his/her eyes.
- Replace the distilled water within the eye wash bottle regularly to ensure its hygiene condition and be ready for emergency at all times.



Using eye wash unit

5.2.4 Handling Electrical Incidents

- Under safe circumstances, switch off the source of electricity, and break the contact between the casualty and the electricity supply. **Never** touch the patients with bare hands if it is not certain that the injured is separated from the power sources. If it is impossible to cut off the electric current, stand on dry insulating materials, such as wooden boxes and plastic mats, and remove the patients from the power sources with dry insulating objects.
- Check the degree of electrical burn. For severe injuries, place sterile dressings over the wound and secure with bandage. Then, seek medical treatment.
- If respiratory and cardiac arrest is resulted, it is essential to perform cardiopulmonary resuscitation and use automated external defibrillator immediately.

5.3 Recording of Accidents

Schools should make detailed logs of all accidents occurred during learning activities. If a serious accident/incident occurs (e.g. the injured have been sent to hospital for treatment), the school must complete a detailed report with reference to the form in Appendix 1 and submit it to the respective Regional Education Office. For details, please refer to **Appendix 1 Report Log on Accidents during Learning Activities of Primary Science (Sample)**. Each log should include:

- Date, time and place of the accident
- Particulars of the casualty
- Details of the accident
- Information about the learning activities
- Way of handling the accident
- Notifications to parents or guardians
- Follow-up actions
- Suggestions for improvement



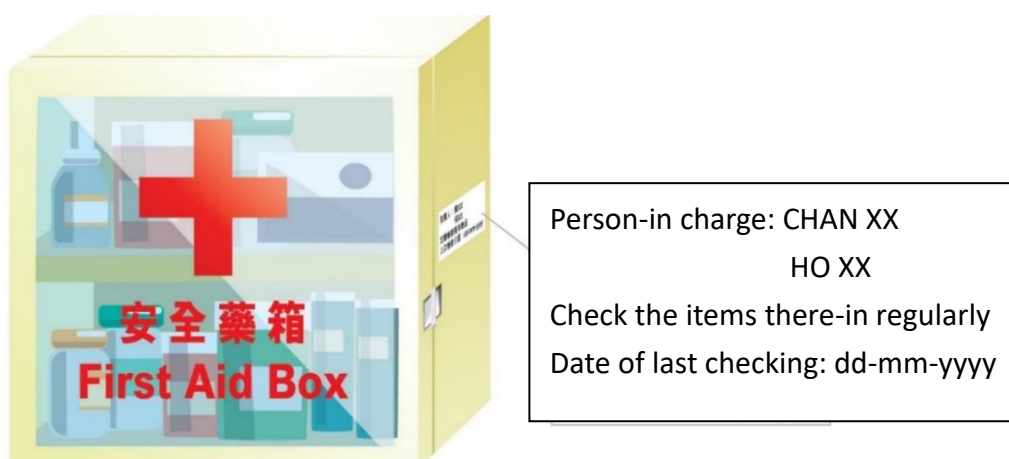
6

**Items in a
First Aid
Kit**

CHAPTER 6 ITEMS IN A FIRST AID KIT

6.1 Points to Note on Installation of First Aid Kit

- First aid kits should be installed at conspicuous and easily accessible locations.
- When there is no first aid kit at the venue of outdoor activity, a notice must be posted at conspicuous spots indicating the locations of the nearest first aid kits.
- During outdoor activities, such as field studies, teachers should bring along first aid kits for emergency use.
- To prevent the transmission of blood-borne communicable diseases, schools should keep disposable plastic gloves, cotton wools, sterile dressings/gauze pads and antiseptics in their first aid kits.
- Specify the expiry dates and dates of purchase of all first aid items, such as saline solution and disinfectant. They should be refilled or replaced when necessary.
- First aid kits shall be maintained fully equipped at all times. Schools should designate persons responsible for regularly checking the items in the first aid kits to ensure that there is sufficient quantity and that they are in good conditions.



Check the items in the first aid kit regularly

- All teachers should be familiar with the items in first aid kits and their uses.
- For items to be kept in first aid kit and the points to note, please refer to Section 3.4.3 and its' Appendix 1 of the [School Administration Guide](#).

6.2 List of Suggested Items in a First Aid Kit

- The person(s) in charge of first aid kits should ensure that
 - a list of items in first aid kit is included;
 - all the medicines are properly labelled;
 - quantities of items are checked regularly to see if any refill is needed; and
 - expiry dates of medicines are checked so that replacements can be made accordingly.
- According to the [*“Occupational Safety and Health Ordinance”*](#), the person responsible for a workplace should ensure the provision at workplaces of adequate facilities for treating bodily injuries to employees as a result of accidents occurring at those workplaces.
- Recommended list of first aid items⁸:
 1. Disinfectants or distilled water (for cleaning wounds)
 2. Alcohol (for cleaning first aid equipment)
 3. Disposable plastic gloves (to avoid direct contact with wounds or blood)
 4. Surgical masks
 5. Sterile dressings/dressing packs/gauzes of different sizes (individually packed)
 6. Elastic bandages of different widths
 7. Triangular bandages
 8. Cotton sticks and cotton wool
 9. Adhesive plasters of different sizes
 10. Scissors
 11. Forceps
 12. Spray bottles or eye cups for washing eyes

⁸ To note the purchase or expiry dates of various first aid items and to make supplements or replacements.

13. Cold pack⁹
 14. Electronic thermometer
 15. CPR face shield (disposable) or CPR pocket masks for resuscitation
 16. Emergency helpline information (such as contact phone number of nearby ambulance stations)
- **Additional recommended items:** Automatic External Defibrillators (AED) (Schools are encouraged to install AEDs to provide extra protection for their students and staff, and encourage their staff to receive relevant training.) (Please refer to the website of [*"Hong Kong Fire Services Department -- Cardiopulmonary Resuscitation \(CPR\) & Automated External Defibrillator \(AED\) Online Learning Resources"*](#).)

⁹ Some cold packs must be stored in the freezer of a refrigerator; for the use of [heat and cold therapies](#), please visit the related website of the [Department of Health](#).



7

**Considerations
on Activities
That May Cause
Physical
Discomfort
and/or
Emotional
Problems**

CHAPTER 7 CONSIDERATIONS ON ACTIVITIES THAT MAY CAUSE PHYSICAL DISCOMFORT AND/OR EMOTIONAL PROBLEMS

7.1 Avoid Conducting Experiments that may cause Physical Discomfort

When students serve as subjects of science inquiry activities, teachers should ensure that they are physically and psychologically fit. If students have relevant health problems, they should not participate in this type of science inquiry activities.

Students who are exempted from attending Physical Education lessons for medical reasons should not be allowed to take part in any physiological science inquiry activities involving strenuous exercises. For example, measuring lung capacity and investigation on the effects of exercises on pulse rate may cause physical discomfort to students who are the subjects of science inquiry activities. Do not compare who has the largest vital lung capacity or the fastest pulse rate. The difference in experimental results is due to individual difference and science inquiry activities should not be treated as competitions of physical fitness. Besides, remind students to stop immediately whenever they feel unwell during science inquiry activities.

7.2 Points to Note on Handling Students' Emotional Problems

Primary Science teachers can design different types of learning activities based on curriculum needs. No matter in schools, outdoors or even outside the HKSAR, teachers should keep a sharp sense of students' needs and feelings so as to avoid emotional problems during activities, which may affect their own safety or that of others.

- When designing learning activities, teachers should avoid activities which may cause emotional disturbance or embarrassment to students or others.
- When planning activities, teachers should pay attention to how to provide appropriate support and guidance to students with special educational needs and enable them to participate first-hand in learning activities of Primary Science. If necessary, teachers can invite the Special Educational Needs Coordinator (SENCO) or a member of the Student Support Team who is knowledgeable or experienced in supporting students with special educational needs to devise measures and contingency plans on taking care of students. For more

information about common special educational needs, please refer to the following website of [Special Education Resource Centre](#) of the EDB.

- Before outdoor activities, Teachers could assess the individual conditions of the students with special educational needs and invite more teaching staff to join the activities on a need basis, or have the students with special educational needs accompanied by their adult family members/guardians.
- Teacher should pay attention to the characteristics of learning of students with special educational needs and adjust their teaching strategies accordingly. For example, some students with autistic spectrum disorders could be inert or over-sensitive to sound, light, touch and etc. Also, emotional disturbance could arise when they cannot interpret the environment or changes. When teachers plan such science inquiry activities, it is recommended to discuss the tasks with teacher(s) who are familiar with the learning needs of student concerned and hence adjust the activity design.
- During activities, pay more attention to students' emotional response. If any students are found to be distressed or embarrassed, teachers should handle carefully and do not force them to continue the activities. If any students cause disturbance to others or show emotional problems during activities, teachers should let them calm down first before following up. If necessary, teachers may seek professional support for appropriate counselling and follow-up actions, for example, school social workers and colleagues from counselling and discipline team.
- Teachers should establish a good classroom routine to enhance learning effectiveness and minimise chance of accidents.

APPENDIX 1 Report Log on Accidents during Learning Activities of Primary Science (Sample)

Reference: [Safety Guidelines on Physical Education Key Learning Area for Hong Kong Schools](#)

1. Date, time and venue of the accident

Date : _____ Time : _____ Venue : _____

2. Injured person(s) (Please put a “✓” in the appropriate boxes)

☐ Teacher ☐ Student (Class : _____) ☐ Others: _____ (Please specify)

Name : _____ Gender : _____ Age : _____

☐ Teacher ☐ Student (Class : _____) ☐ Others: _____ (Please specify)

Name : _____ Gender : _____ Age : _____

3. Details of the accident and injury

Activity engaged in at the time of the accident :

Location and work of the person-in-charge at the time of the accident :

Description of the accident :

Description of injuries :

4. Description of the learning activity

Learning unit: _____ Topic: _____

Objective(s): of the activity: _____

5. Way of handling the accident (including administering first aid)

6. Agencies called for help (please put a '✓' in the appropriate box(es))

	Time of notification and by whom	Arrival Time
☐ Ambulance	_____	_____
☐ Police	_____	_____
☐ Others (Please specify) _____	_____	_____

Action(s) taken by the above person(s) on arrival : _____

7. Parents/Guardians notified

Time of first notification : _____ Time of successful notification : _____ Arrival Time : _____

Name : _____ Relationship : _____

Action(s) taken by parents/guardians : _____

8. Follow-up action(s) (Responsible person and date)

9. Suggestions for improvement (Responsible person and date)

10. Remarks

11. Report made by

(i):	_____	_____	_____
	(Name in Block Letters)	(Post)	(Signature)
(ii):	_____	_____	_____
	(Name in Block Letters)	(Post)	(Signature)

Reported on: : _____

Signature of the Principal : _____

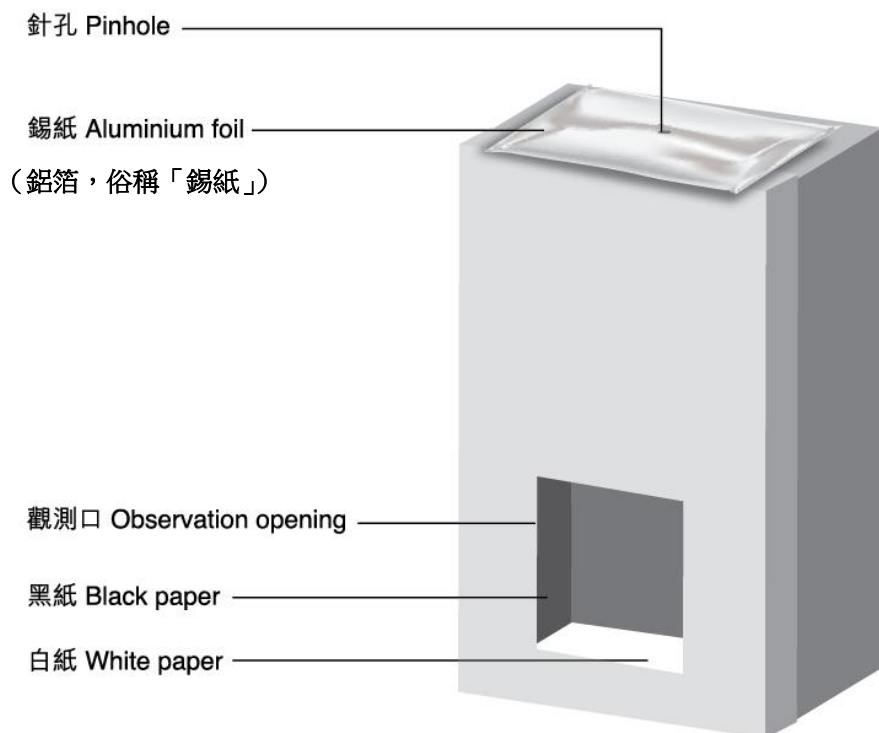
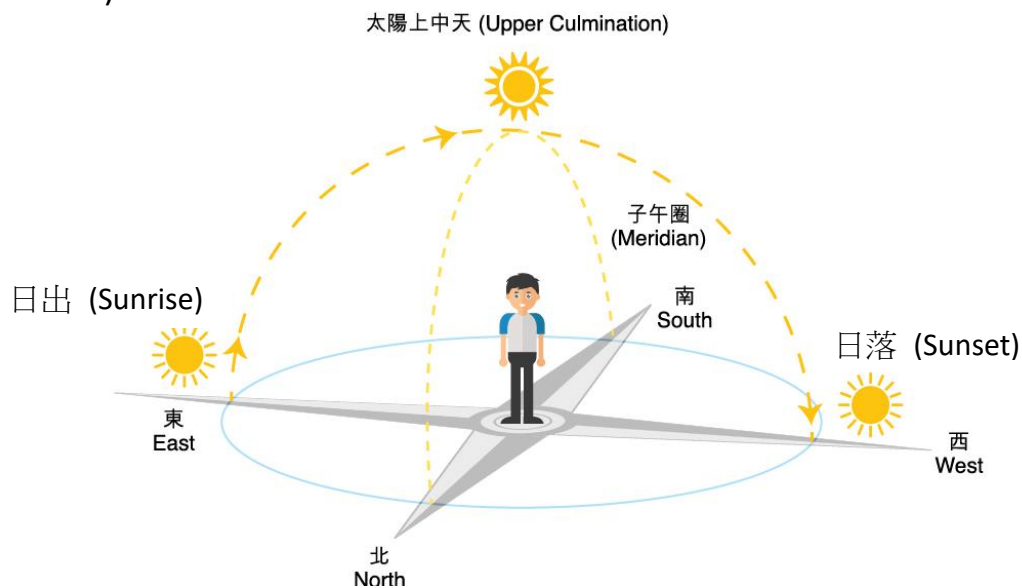
APPENDIX 2 Ways to Observe Solar Eclipses

(also applicable to observing the Sun)

To ensure safety, **do not observe solar eclipses by direct observation**. It is recommended to use indirect methods to observe the solar eclipses. Please read the following two methods:

1. Pinhole Projection

This method is more suitable for solar eclipses with the Sun at culmination (near the zenith).



A. Production of a pin-hole box¹⁰

- Tools: shoe box, black paper, white paper, cutter, needle, adhesive tape, aluminium foil, compass, watch/timer.
- Procedure:
 1. Place the shoe box in an upright position. Cover the interior of the box with black paper. Stick the white paper to the bottom as a screen.
 2. At the centre of the top of the box, cut a square-shaped hole of about 2 cm x 2 cm wide.
 3. Tape the aluminium foil on the square hole, then carefully poke a small hole at the centre of the aluminium foil with a needle.
 4. Open a rectangular hole on one side of the shoe box as an opening for observation of the projection of the Sun. The opening does not need to be too big, as long as the screen at the bottom can be seen clearly.

B. Directions

- Bring the pinhole camera to an open area and put it on the ground or table. First, check the directions with a compass. Then, move the pinhole camera so that its opening faces the north. The side with the pinhole faces upward while the side with white paper faces downward.
- When the Sun is approaching the zenith, the Sun is projected through the pin hole as a light spot onto the white paper.
- In the event of a solar eclipse and the position of the sun is not near the middle of the sky, the opening of the projection box must be adjusted until the spot can be projected onto the white paper below.
- Note that the light spot is bigger than the pinhole. If the distance between the pinhole and the white paper is 25 cm, the diameter of the spot will be about 2.5 mm. (If the distance between the pinhole and the white paper is longer, the spot will appear larger but dimmer.)
- Note how the light spot changes during a solar eclipse. (Since sunlight is shining at an angle onto the white paper, the image of the Sun will appear slightly elongated.)

¹⁰ If students must use sharp tools/objects for activities, teachers must first teach them how to use sharp tools/objects correctly and safely to avoid injury.

C. Drawing the phases of a solar eclipse and the change of positions of the Sun

- Fix the box on a table or the ground and draw the outline of the Sun on a piece of white paper with a pencil.
- Students can record the position and shape of the sun projected on white paper at regular intervals (for example, 30 minutes) throughout the entire solar eclipse (including the 15 minutes before and after the start and end). This will help them understand the process of the solar eclipse and how the Sun's position in the sky changes.

2. Tree Leaves Projection

- Never observe the Sun directly through the tree leaves.
- The small gaps among tree leaves act like pinholes. When sunlight shines through them, the image of the Sun is projected on the ground. We can observe solar eclipse through these projections on the ground.
- We can also record the progress of a solar eclipse with a video camera.

APPENDIX 3 Related Guidelines, Circulars and References

(I) Education Bureau Guidelines and Handbooks

Education Bureau (2010). [*Teaching Technology and Living/Home Economics in Secondary Schools - Safety Booklet*](#). Hong Kong: Author.

Education Bureau (2013). [*Safety in Science Laboratories*](#). Hong Kong: Author.

Education Bureau (2023). [*Guidelines on Safety for Visual Arts in Primary Schools*](#). Hong Kong: Author.

Education Bureau (2023). [*Safety Guidelines on Physical Education Key Learning Area For Hong Kong Schools*](#). Hong Kong: Author.

Education Bureau (2024). [*Guidelines on Study Tours Outside Hong Kong*](#). Hong Kong: Author.

Education Bureau (2020). [*Safety in School Workshop*](#). Hong Kong: Author.

Education Bureau (2023). [*Guidelines on Outdoor Activities*](#). Hong Kong: Author.

Education Bureau (2025). [*School Administration Guide*](#). Hong Kong: Author.

Curriculum Development Council (2017). [*General Studies Curriculum Guide for Primary Schools \(Primary 1 – Primary 6\) \(2017\)*](#). Hong Kong: Author.

Curriculum Development Council (2025). [*Science \(Primary 1 – 6\) Curriculum Guide*](#). Hong Kong: Author.

(II) Education Bureau Circulars and Circular Memoranda

1. [*Block Insurance Policy, School Safety and Insurance*](#)
2. [*Insurance in Schools*](#) (EDBC No. 16 /2004)
3. [*Guidance Notes for the Arrangement of School Visits to Historic Monuments and Archaeological Sites in Hong Kong*](#) (EDBC No.2/2001C)
4. [*Tropical Cyclones and Heavy Persistent Rain Arrangements for Kindergartens and Day Schools*](#) (EDBC No. 5/2022) (Updated in April 2025)

The above handbooks, guidelines, circulars and circular memoranda will be updated as needed. The latest version of the relevant information can be found on the website of the [Education Bureau](#) or the websites of the relevant departments.

(III) References

Civil Aviation Department. [*"Small Unmanned Aircraft Order" Safety Requirements Document and Relevant Guidelines*](#).

Civil Aviation Department. [*Small Unmanned Aircraft Order \(Cap.448G\)*](#).

Food and Environmental Hygiene Department. [*Food Hygiene Code*](#).

Hong Kong Observatory. [*Hong Kong Observatory*](#).

Hong Kong Red Cross (2022). [*First Aid Manual*](#) (Chinese Version). Hong Kong: Author.

Hong Kong Customs and Excise Department. [*Toys and Children's Products Safety*](#).

Civil Aviation Department. [*Specification of Parameters for Operating Requirements*](#).

Hong Kong St John Ambulance (2016). [*First Aid Manual \(Fourth Edition\)*](#) (Chinese Version). Hong Kong: Author.

Leisure and Cultural Services Department. [*Outdoor Learning Activities - Guided Visits to Leisure and Cultural Services Department's Facilities*](#).

Education Bureau. [*Understanding and Helping Children with Special Educational Needs \(A Guide for Teachers\)*](#) (Chinese Version).

Education Bureau. [*Primary Science*](#).

Education Bureau. [*General Studies for Primary Schools*](#).

Education Bureau. [*Science Education - Laboratory Safety and Management*](#).

Education Bureau. [*Furniture and Equipment List for New Schools*](#).

Education Bureau. [*School Safety & Insurance*](#).

Education Bureau. [*School Activities Guidelines*](#).

Education Bureau. [*Integrated Education and Special Education Information Online \(SENSE\)*](#).

Labour Department (2018). [*Occupational Safety and Health in Schools*](#) (Chinese Version).

Agriculture, Fisheries and Conservation Department (2016). [*Country Park Hiking Safety Guidelines*](#).

Department of Health. [*Guidelines on Prevention of Communicable Diseases in Schools/Kindergartens/Kindergartens-cum-Child Care Centres/Child Care Centres*](#).

Department of Health (2021). [*Travel Health Service*](#).

Electrical and Mechanical Services Department. [*Guidance Notes for the Electrical Products \(Safety\) Regulation \(2019 Edition\)*](#).

Electrical and Mechanical Services Department. [*Household Electrical Safety Handbook*](#).

Environmental Protection Department. [*Rechargeable Battery Recycling Programme*](#).

Environmental Protection Department. [*Air Quality Health Index*](#).

Hospital Authority. [*Atlas of Poisonous Plants in Hong Kong - A Clinical Toxicology Perspective*](#).

Occupational Safety and Health Council. [*Certificate of Competence in First Aid*](#).

Auxiliary Medical Service. [*First Aid Topics and Knowledge*](#).

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- Auxiliary Medical Service, HKSAR
- Customs and Excise Department, HKSAR
- Electrical and Mechanical Services Department, HKSAR
- Fire Service Department, HKSAR
- Hong Kong Space Museum, Leisure and Cultural Services Department, HKSAR

