**LAB TECHNICIAN NOTES SCHOOL:**

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| **EXPERIMENT 6.2: Calculating the distance to the sun** |

*Risks should be managed by use of PPE and/or appropriate control measures*

Description of procedure (attach a copy of the experiment)

**Oxford Science 10:** pages 142–143 and 217

**Equipment required**

|  |
| --- |
| Each group requires:  Meter ruler  Retort stand (about 76cm in height)  Clamp  Coat hanger  Sticky tape  Needle or pin  2 x A4 sheets of paper  Calculator  Sun visible in the sky |

**Recipes**

| Chemical/solution | Formula | Mol. Wt | Procedure |
| --- | --- | --- | --- |
|  |  |  |  |

**Hazardous chemicals required/produced**

| **Reactant or product name and concentration** | **GHS classification** | **GHS hazard statement** | **Control measures** |
| --- | --- | --- | --- |
|  |  |  |  |

NON-HAZARDOUS substances

|  |  |  |  |
| --- | --- | --- | --- |
|  |  |  |  |

Other hazards and possible risks

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| --- |
| Meter rulers have sharp corners, on each end of the ruler. Should be used safely and in consideration of other students.  Sewing needle or pin can cause spike injuries. Ensure the class uses them responsibly.  Never look directly at the sun. Looking at the sun could damage eyes.  If using metal coat hangers be aware of the sharp pointed end on the hook. |

Protective measures

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Lab coat | Safety glasses | Gloves | Fume cupboard | Other |
| Yes | Yes |  |  |  |
|  | | | | |

Assessor’s signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\*\*\*\*\***This assessment is not valid until it has been completed and signed by an assessor approved by the school.**

***All technicians are to sign the following statement before conducting this experiment.***

I have read this risk assessment and I understand the safety procedures and risks involved.

|  |  |  |
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| **Technician’s name** | **Technician’s signature** | **Date** |
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Disposal of waste and lab technician notes

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| A4 photocopy paper can be used to fasten to the coat hanger. Anything that can clamp and hold A4 paper securely is fine. Coat hangers work well. Coat hangers with the paper attached can be reused for future classes.  The retort stand needs to be at least 75cm long.  Ensure it is a sunny day.  Ensure all pins/needles are returned. |

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| \*\*\*\*NOTES:   * Individual schools have a legal obligation to acquire their own manufacturer’s SDS and produce a risk assessment relevant to their own situation. * This risk assessment sheet is provided for your guidance only. * Disposal of waste is subject to the laws and regulations of states, territories and local authorities. * It is not to be assumed that products bought from supermarkets are non-hazardous.   DISCLAIMER:  These guidelines are designed to serve as a general reference only. It does not replace the school’s legal obligation to provide a valid risk assessment to ensure the safety of the staff and students conducting this experiment. While the Publisher has endeavoured to ensure that the material provided is free from error, the Publisher does not warrant the accuracy, adequacy or completeness of that material or that the material is suitable for your intended use. To the fullest extent permitted by law the Publisher disclaims all responsibility for any actions taken or not taken in relation to the material provided. |

**LAB TECHNICIAN NOTES SCHOOL:**

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| **CHALLENGE 6.4: Exploring the Doppler effect** |

*Risks should be managed by use of PPE and/or appropriate control measures*

Description of procedure (attach a copy of the experiment)

**Oxford Science 10:** pages 146–147 and 218

**Equipment required**

|  |
| --- |
| Each group requires:  Source of sound that can be spun on a rope (known as a Doppler effect apparatus) |

**Recipes**

| Chemical/solution | Formula | Mol. Wt | Procedure |
| --- | --- | --- | --- |
|  |  |  |  |

**Hazardous chemicals required/produced**

| **Reactant or product name and concentration** | **GHS classification** | **GHS hazard statement** | **Control measures** |
| --- | --- | --- | --- |
|  |  |  |  |

NON-HAZARDOUS substances

|  |  |  |  |
| --- | --- | --- | --- |
|  |  |  |  |

Other hazards and possible risks

|  |
| --- |
| The Doppler effect apparatus is held in the hand and spun at varying speeds creating different pitched sound depending on the speed in which it is spun. The area when spinning, needs to be clear from students and equipment so when spun it does not hit anyone or anything. There is also the risk of the person doing the spinning being hit with it. Strict supervision is required when operating. |

Protective measures

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Lab coat | Safety glasses | Gloves | Fume cupboard | Other |
| Yes | Yes |  |  |  |
|  | | | | |

Assessor’s signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\*\*\*\*\***This assessment is not valid until it has been completed and signed by an assessor approved by the school.**

***All technicians are to sign the following statement before conducting this experiment.***

I have read this risk assessment and I understand the safety procedures and risks involved.

|  |  |  |
| --- | --- | --- |
| **Technician’s name** | **Technician’s signature** | **Date** |
|  |  |  |
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Disposal of waste and lab technician notes

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| Doppler effect apparatus can be purchased from a science equipment supplier. Plastic tubing from a children’s toy store designed for this use can also be used to good effect. |

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**LAB TECHNICIAN NOTES SCHOOL:**

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| **EXPERIMENT 6.4: Investigating emission spectra** |

*Risks should be managed by use of PPE and/or appropriate control measures*

Description of procedure (attach a copy of the experiment)

**Oxford Science 10:** pages 146–147 and 218

**Equipment required**

|  |
| --- |
| This is a class demonstration as usually only one set of emission/discharge tube apparatus.  Discharge tubes for different elements – hydrogen, helium and neon  Power source specifically designed for the discharge tubes.  Spectroscope (class set) |

**Recipes**

| Chemical/solution | Formula | Mol. Wt | Procedure |
| --- | --- | --- | --- |
|  |  |  |  |

**Hazardous chemicals required/produced**

| **Reactant or product name and concentration** | **GHS classification** | **GHS hazard statement** | **Control measures** |
| --- | --- | --- | --- |
|  |  |  |  |

NON-HAZARDOUS substances

|  |  |  |  |
| --- | --- | --- | --- |
|  |  |  |  |

Other hazards and possible risks

|  |
| --- |
| The emission discharge tube apparatus is plugged into mains electricity. Do not use near liquid. There is the possibility of an electric shock. Ensure electrical equipment has current tag, safe and operated correctly. Check cords regularly and replace if any signs of damage.  The discharge tubes will get hot. Turn off the apparatus and allow to cool before handling. Use a cotton glove to remove tubes gently. |

Protective measures

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Lab coat | Safety glasses | Gloves | Fume cupboard | Other |
| Yes | Yes | Yes |  | Cotton gloves for handling the emission tubes |
|  | | | | |

Assessor’s signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\*\*\*\*\***This assessment is not valid until it has been completed and signed by an assessor approved by the school.**

***All technicians are to sign the following statement before conducting this experiment.***

I have read this risk assessment and I understand the safety procedures and risks involved.

|  |  |  |
| --- | --- | --- |
| **Technician’s name** | **Technician’s signature** | **Date** |
|  |  |  |
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Disposal of waste and lab technician notes

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| Read the instructions that come with the emission tube apparatus.  Handle the discharge tubes gently. They are fragile.  Ensure the emission tube apparatus is turned off when not in use.  When placing the emission tubes into the apparatus the end with the ‘crook’ goes up.  Store the emission tubes carefully in their boxes when cool and finished with. Place them where they will not be knocked or damaged. |

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**LAB TECHNICIAN NOTES SCHOOL:**

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| **CHALLENGE 6.5: The expanding Universe** |

*Risks should be managed by use of PPE and/or appropriate control measures*

Description of procedure (attach a copy of the experiment)

**Oxford Science 10:** pages 148–149 and 219

**Equipment required**

|  |
| --- |
| Balloon, permanent marker and tape measure |

**Recipes**

| Chemical/solution | Formula | Mol. Wt | Procedure |
| --- | --- | --- | --- |
|  |  |  |  |

**Hazardous chemicals required/produced**

| **Reactant or product name and concentration** | **GHS classification** | **GHS hazard statement** | **Control measures** |
| --- | --- | --- | --- |
|  |  |  |  |

NON-HAZARDOUS substances

|  |  |  |  |
| --- | --- | --- | --- |
|  |  |  |  |

Other hazards and possible risks

|  |
| --- |
| **ALLERGY ALERT:** Balloons may contain latex. Check for latex allergies before use. They can also pop and give a fright.  Permanent marker may contain solvents, avoid breathing vapour. Replace lid after using. Difficult to remove off clothing and benches. |

Protective measures

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Lab coat | Safety glasses | Gloves | Fume cupboard | Other |
| Yes | Yes | Yes |  |  |
|  | | | | |

Assessor’s signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\*\*\*\*\***This assessment is not valid until it has been completed and signed by an assessor approved by the school.**

***All technicians are to sign the following statement before conducting this experiment.***

I have read this risk assessment and I understand the safety procedures and risks involved.

|  |  |  |
| --- | --- | --- |
| **Technician’s name** | **Technician’s signature** | **Date** |
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Disposal of waste and lab technician notes

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| Balloons to hard rubbish once popped. |

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| \*\*\*\*NOTES:   * Individual schools have a legal obligation to acquire their own manufacturer’s SDS and produce a risk assessment relevant to their own situation. * This risk assessment sheet is provided for your guidance only. * Disposal of waste is subject to the laws and regulations of states, territories and local authorities. * It is not to be assumed that products bought from supermarkets are non-hazardous.   DISCLAIMER:  These guidelines are designed to serve as a general reference only. It does not replace the school’s legal obligation to provide a valid risk assessment to ensure the safety of the staff and students conducting this experiment. While the Publisher has endeavoured to ensure that the material provided is free from error, the Publisher does not warrant the accuracy, adequacy or completeness of that material or that the material is suitable for your intended use. To the fullest extent permitted by law the Publisher disclaims all responsibility for any actions taken or not taken in relation to the material provided. |