**LAB TECHNICIAN NOTES SCHOOL:**

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| **EXPERIMENT 1.1: Extracting DNA** |

*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 2–3 and 180

**Equipment required**

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| Class requires:  PART A:  100g (1/2 cup) dried peas soaked overnight in 2 cups of water, or frozen peas (thaw first)  200ml (1 cup of water)  6g (1 tsp) table salt  20ml of dishwashing liquid  1g (1/4 tsp) meat tenderiser  Blender  Sieve  Stirring rod or spoon  Timer  PART B:  Each group requires:  Ice-cold ethanol (stand a sealed bottle containing 200ml of ethanol in a metal bowl of ice water for an hour prior to using)  Methylene blue stain  Test tubes and test tube rack or 50ml glass vials  Skewer, glass rod (toothpick for vials)  Microscope  Clean microscope slides and cover slips |

**Recipes**

| Chemical/solution | Formula | Mol. Wt | Procedure |
| --- | --- | --- | --- |
| Methylene blue  Stock solution  (liquid) | C16H18CIN3S | 319.85 | Wear safety glasses, lab coat, gloves and closed in shoes in a well ventilated room.  Weigh 1.5g of solid methylene stain into a 200ml beaker.  In a fume cupboard, dissolve the stain in 100ml of 95% ethanol. This is your stock solution.  Note: Highly flammable liquid see GHS classification statement below. |
| Methylene blue  Working solution  (liquid) |  |  | Take 10ml of the stock solution and make up to 100ml with distilled/deionised water.  This is the stain that the students will use in class to identify DNA. |

**Hazardous chemicals required/produced**

| **Reactant or product name and concentration** | **GHS classification** | **GHS hazard statement** | **Control measures** |
| --- | --- | --- | --- |
| **Ethanol** | **DANGER**  https://jr.chemwatch.net/Resources/Images/GHSFla.GIF  Flammable  **C:\Users\temp\Dropbox\Healthhazard_big[1].jpg**  Health hazard | H225 – Highly flammable liquid and vapour | Wear safety equipment. Decant in fume cupboard to minimise vapours.  **DO NOT USE NEAR IGNITION SOURCES.**  IF IN EYES: rinse with water for several minutes. Lift eyelids and gently flush with clean running water. If irritation persists seek medical advice.  IF ON SKIN: Rinse skin with water/shower  IF INHALED: remove person to fresh air keep at rest in a position comfortable for breathing.  IF SWALLOWED: Do not induce vomiting. Seek medical advice. |
| **Methylene blue stain (solid)** | **WARNING**  C:\Users\temp\Dropbox\GHSHar[1].gif | H302- Harmful if swallowed  H401- Toxic to aquatic life | Wear safety glasses, lab coat, gloves and closed in shoes when handling. Use in a well ventilated room.  Avoid release to the environment.  IF SWALLOWED: Seek medical attention without delay. Contact poison Information.  Urgent hospital attention is likely needed.  Induce vomiting if patient is conscious and medical treatment more than 15 minutes away.  IF ON SKIN: Wash skin with water and soap.  IF IN EYES: If in eyes rinse with clean running water for several minutes. Lift eye lids occasionally to allow complete irrigation. Seek medical attention without delay.  IF INHALED: Remove patient to fresh air. Gently blow nose. Seek medical attention if irritation persists. |
| **Methylene blue stain stock solution**  (liquid)  ( Made up in 95% ethanol ) | **DANGER**  C:\Users\temp\Dropbox\GHSHar[1].gif  https://jr.chemwatch.net/Resources/Images/GHSFla.GIF  Flammable | H225 – Highly flammable liquid and vapour  H319 – Causes serious eye injury | Keep away from heat, flames and sparks.  Wear safety glasses, lab coat, gloves and closed in shoes when handling. Use in a well ventilated room.  IF SWALLOWED: Do not induce vomiting.  Give water to rinse mouth but do not swallow. Seek medical advice.  IF ON SKIN: Wash skin with water and soap. Seek medical help if irritation persists.  IF IN EYES: Rinse with clean running water for several minutes. Lift eye lids occasionally to allow complete irrigation. Seek medical attention without delay.  IF INHALED: Remove patient to fresh air if uncomfortable. Seek medical attention. |
| **Salt (solid)** | **WARNING**  C:\Users\temp\Dropbox\GHSHar[1].gif  Irritant | H315 – Causes skin irritation  H319 – Causes serious eye irritation.  H350 – May cause respiratory irritation | Wear gloves.  IF ON SKIN: wash hands with soap and water.  Wear safety glasses.  IF IN EYES: flush immediately with fresh running water for several minutes. If irritation continues seek medical advice.  Avoid breathing dust. Use in a well ventilated area. |

NON-HAZARDOUS substances

|  |  |  |  |
| --- | --- | --- | --- |
| **Methylene blue stain working solution**  (liquid) |  | Not classified as hazardous. | Wear safety glasses, lab coat, gloves and closed in shoes when handling. Use in a well ventilated room.  IF ON SKIN: Wash skin with water and soap. Seek medical help if irritation persists.  IF IN EYES: If in eyes rinse with clean running water for several minutes. If irritation continues seek medical advice. |
| **Meat tenderizer** |  |  | Check use by date |
| **Dried or frozen peas** |  |  |  |

Other hazards and possible risks

|  |
| --- |
| BLENDER - Keep fingers and hair clear of rotating blades. The lid should be securely on before it will start. Ensure electrical equipment has current tag, safe and operated correctly.  Wooden splint/taper or toothpick may have splinters that can embed in skin.  Test tubes, vials, glass stirring rods, microscope slides and coverslips may break and cause cuts. Sweep up broken glass with a brush and dustpan, do not use fingers. Discard any chipped or cracked glassware to a broken glass bucket.  **Microscopes** are delicate instruments and should be handled carefully and correctly. They are usually connected to mains electricity and therefore there is the risk of electric shock, particular precaution around liquids, keep away. Ensure electrical equipment has current tag, safe and operated correctly. Check cords regularly, replace if any signs of damage. |

Protective measures

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Lab coat | Safety glasses | Gloves | Fume cupboard | Other |
| Yes | Yes | Yes | Yes | Use fume cupboard when making up stock solution and decanting ethanol. |
|  | | | | |

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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| --- |
| A sieve can be used to separate the solids from the DNA source. Chux cloth could also be used.  Ensure the meat tenderiser and peas are in date and have not expired. Practical will work better if everything is in date.  Pea pulp can be wrapped or put in a bag then put in the bin.  Left over DNA source and the student ethanol/DNA mixture can go down the sink followed by plenty of water. |

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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 1.2: Modelling the structure of DNA** |

*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 4–5 and 181

**Equipment required**

|  |
| --- |
| Each group requires:  4 long pipe cleaners and 24 beads (6 different colours) |

**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

|  |  |  |  |
| --- | --- | --- | --- |
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Other hazards and possible risks

|  |
| --- |
| Pipe cleaners usually have a wire running up the middle. This wire can be sharp and may prick skin.  Beads are to be used for the purpose they are asked for. Don’t allow them to be thrown, swallowed or left on the floor. Left on the floor they could be a slip hazard. |

Protective measures

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

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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| --- |
| Recycle beads and pipe cleaners.  Beads can be purchased from Spotlight. |

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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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| **SKILLS LAB 1.4: Cell division in action** |

*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 10–11 and 183

**Equipment required**

|  |
| --- |
| Each group requires:  Prepared microscope slide/s showing a tissue that is in the process of growth and development.  Light microscope |

**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

|  |
| --- |
| Prepared microscope slides may break and cause cuts. Sweep up broken glass with a brush and dustpan, do not use fingers. Discard any chipped or cracked slides to a broken glass bucket.  Microscopes are delicate instruments and should be handled carefully and correctly. They are usually connected to mains electricity and therefore there is the risk of electric shock, particular precaution around liquids, keep away. Ensure electrical equipment has current tag, safe and operated correctly. Check cords regularly and replace if any signs of damage. |

Protective measures

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

Disposal of waste and lab technician notes

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| --- |
| Have a class set of prepared slides. They can be purchased from a biological supplier or you can make your own from a growing root tips of a plant, such as garlic or spring onion. |

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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 1.5: Modelling meiosis** |

*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 12–13 and 183

**Equipment required**

|  |
| --- |
| Each group requires:  Pipe cleaners, sticky tape, felt-tip pens, A4 sheet of paper |

**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

|  |
| --- |
| Pipe cleaners usually have a wire running up the middle. This wire can be sharp and may prick skin.  Be aware of any safety instructions for the felt tip pens you intend using. |

Protective measures

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

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** |
|  |  |  |
|  |  |  |

Disposal of waste and lab technician notes

|  |
| --- |
| Reuse pipe cleaners, if possible. |

|  |
| --- |
| \*\*\*\*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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| **EXPERIMENT 1.6: Zazzle genetics** |

*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 14–15 and 184

**Equipment required**

|  |
| --- |
| Each group requires:  A bag containing 6 different coloured counters  Permanent marker  Toothpicks  Pipe cleaners  Pink and white large marshmallows  Small marshmallows  Blue and black felt-tipped pens |

**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

|  |  |  |  |
| --- | --- | --- | --- |
| Marshmallows |  | Not classified as hazardous | Do not eat in the laboratory |

Other hazards and possible risks

|  |
| --- |
| Pipe cleaners usually have a wire running up the middle. This wire can be sharp and may prick skin.  Toothpicks may have splinters that can embed in skin.  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 |  |  |  |  |
|  | | | | |

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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| Reuse pipe cleaners.  Bin used toothpicks and marshmallows.  Keep counters with markings for next classes or remove the permanent marker with a little methylated spirits and a cotton ball. Wear gloves, safety glasses and clean in a well ventilated room. |

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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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| **EXPERIMENT 1.7: Blood typing experiment** |

*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 16–17 and 185

**Equipment required**

|  |
| --- |
| Each group requires:  Anti-A solution (2M hydrochloric acid)  Anti-B solution (2M sulfuric acid)  Sample blood O (distilled/deionised water)  Sample blood A (0.1M silver nitrate solution)  Sample blood B (0.1M barium nitrate solution)  Sample blood AB (a 50:50 mix of 0.1M silver nitrate and 0.1M Barium nitrate solutions)  Spotting tiles  6 pipettes, one for each solution |

**Recipes**

| Chemical/solution | Formula | Mol. Wt | Procedure |
| --- | --- | --- | --- |
| 0.1M Silver nitrate  solution | AgNO3 | 169.87 | Wear a lab coat, safety glasses and gloves. Make up in a fume cupboard or well ventilated lab.  To make 1 litre:  Dissolve 16.99g silver nitrate (solid) in approximately 250ml of distilled/deionised water and then make up to 1 litre with distilled/deionised water.  Store in a brown bottle.  Commercially made 0.1M silver nitrate can be brought from a chemical supplier.  **CAUTION:** Silver nitrate looks clear when made up but stains black. Hard to remove once it is black. It may also burn skin. Immediately clean spill, try not to spread. Wash of skin immediately. Reminder all safety equipment must be worn. |
| 0.1M Barium nitrate solution | Ba(NO3)2 | 261.34 | Wear a lab coat, safety glasses and gloves. Make up in a fume cupboard or well ventilated lab.  To make 1 litre:  Dissolve 26.13g barium nitrate (solid) in approximately 250ml of distilled/deionised water and then make up to 1 litre with distilled/deionised water. |
| 2M Sulfuric acid solution | H2SO4 | 98.08 | **Wear a lab coat, safety glasses, closed in shoes and gloves. Make up in a fume cupboard.**  To make 1 litre:  **NOTE:** Adding sulfuric acid to water generates a lot of heat.  Fill a bucket with cold water in the fume cupboard. Put 750ml of distilled/deionised in a 1 litre volumetric flask and place in the bucket. Carefully and slowly with swirling the volumetric flask with the liquid in the flask under the water line, add 110ml of concentrated sulfuric acid. Swirl with the opening of the volumetric flask pointed away from you or any other person.  Once cool make up to 1 litre with distilled/deionised water.  **NOTE:** Always add acid to water, never add water to acid as this may cause violent splashes. |

**Hazardous chemicals required/produced**

| Reactant or product name and concentration | GHS classification | GHS hazard statement | Control measures |
| --- | --- | --- | --- |
| **Hydrochloric acid**  **32% - 36%**  **(concentrate solution)** | **DANGER**  https://jr.chemwatch.net/Resources/Images/GHSTox.GIF  Toxic  https://jr.chemwatch.net/Resources/Images/GHSCor.GIF  Corrosive | H290 - May be corrosive to metals  H330 - Fatal if inhaled  H314 - Causes severe skin burns and eye damage  H335 - May cause respiratory irritation | Acute Toxicity. Do not breathe vapour and avoid skin contact. May damage eyes.  Wear safety glasses, lab coat, closed in shoes and use in a fume cupboard at all times when preparing dilutions etc.  **NOTE:** Always add acid to water never add water to acid as this may cause violent splashes.  IF ON SKIN (or hair): Remove/take off immediately all contaminated clothing. Rinse skin with water/shower  IF INHALED: remove person to fresh air keep at rest in a position comfortable for breathing.  IF IN EYES: Rinse eyes carefully with water for several minutes. Remove contact lenses if able to without causing distress. Continue rinsing. Seek medical attention.  If SWALLOWED: Rinse mouth. Do not induce vomiting.  Seek medical attention if required. |
| **Sulfuric acid 98%**  **(concentrate solution)** | **DANGER**  https://jr.chemwatch.net/Resources/Images/GHSCor.GIF  Corrosive | H290 - May be corrosive to metals  H314 - Causes severe skin burns and eye damage | Do not breathe vapour and avoid skin contact. May damage eyes.  Wear safety glasses, lab coat, closed in shoes and use in a fume cupboard at all times when preparing dilutions etc.  **NOTE:** Always add acid to water, never add water to acid as this may cause violent splashes.  IF ON SKIN (or hair): Remove/take off immediately all contaminated clothing. Rinse skin with water/shower  IF INHALED: remove person to fresh air keep at rest in a position comfortable for breathing.  IF IN EYES: Rinse eyes carefully with water for several minutes. Remove contact lenses if able to without causing distress. Continue rinsing. Seek medical attention.  If SWALLOWED: Rinse mouth. Do not induce vomiting.  Seek medical attention if required. |

| **Reactant or product name and concentration** | **GHS classification** | **GHS hazard statement** | **Control measures** |
| --- | --- | --- | --- |
| **2M Hydrochloric acid (solution)** | **WARNING**  https://jr.chemwatch.net/Resources/Images/GHSHar.GIF  https://jr.chemwatch.net/Resources/Images/GHSCor.GIF  Corrosive | H290 - May be corrosive to metals  H330 - Fatal if inhaled  H314 - Causes severe skin burns and eye damage  H335 - May cause respiratory irritation | Wear safety glasses, lab coat, gloves and closed in shoes when handling.  **Diluted acid** may cause burns and eye damage. Avoid inhalation of vapours. Use in a well ventilated room.  IF ON SKIN: Rinse skin with water/shower  IF IN EYES: Rinse eyes carefully with water for several minutes. Remove contact lenses if able to without causing distress. Continue rinsing. Seek medical advice.  IF INHALED: remove person to fresh air keep at rest in a position comfortable for breathing.  If SWALLOWED: Rinse mouth. Do not induce vomiting.  Seek medical attention if required. |
| **Silver nitrate** | **DANGER**  https://jr.chemwatch.net/Resources/Images/GHSCor.GIF  Corrosive  C:\Users\temp\Dropbox\GHSOxy[1].gif  Oxidising  C:\Users\temp\Dropbox\GHSEnv[1].gif  Environmentally damaging | H272 – May intensify fire: oxidiser  H314 - Causes severe skin burns and eye damage  H410 – Very toxic to aquatic life with long lasting effects | Keep away from flames, heat, hot surfaces and sparks.    Wear a lab coat, safety glasses and gloves. Use in a well ventilated room.  IF ON SKIN: Rinse immediately with cold running water.  IF IN EYES: Rinse gently with fresh running water for several minutes. Wash under upper and lower eye lids by gently pulling apart.  Call a poison centre or doctor immediately.  IF SWALLOWED: Rinse mouth. Do not induce vomiting. Toxic effects and burns can be very serious. Seek medical attention immediately. |
| **Barium nitrate** | **DANGER**  https://jr.chemwatch.net/Resources/Images/GHSHar.GIF  C:\Users\temp\Dropbox\GHSOxy[1].gif  Oxidising | H272 – May intensify fire: oxidiser  H302 – Harmful if swallowed  H332 – Harmful if inhaled  H319 – Causes serious eye irritation  H402 – Harmful to aquatic life | Keep away from flames, heat, hot surfaces and sparks.    Wear a lab coat, safety glasses and gloves.  Use in a well ventilated room or a fume cupboard.  IF ON SKIN: Rinse immediately with cold running water. Seek medical attention if irritation persists.  IF IN EYES: Rinse gently with fresh running water for several minutes. Wash under upper and lower eye lids by gently pulling apart. Seek medical attention immediately.  IF SWALLOWED: Take to hospital immediately. Ensure the SDS goes with the person.  Do not discharge into waterways. |

|  |  |  |  |
| --- | --- | --- | --- |
| **2M Sulfuric acid (solution)** | **DANGER**  https://jr.chemwatch.net/Resources/Images/GHSCor.GIF  Corrosive | H290 - May be corrosive to metals  H290 – May be corrosive to metals  H314 - Causes severe skin burns and eye damage  H319 – Causes serious eye irritation | Wear safety glasses, lab coat, gloves and closed in shoes when handling.  **Diluted acid** may cause burns and eye damage. Avoid inhalation of vapours. Use in a well ventilated room.  IF ON SKIN: Rinse skin with water/shower  IF IN EYES: Rinse eyes carefully with water for several minutes. Remove contact lenses if able to without causing distress. Continue rinsing.  IF INHALED: remove person to fresh air keep at rest in a position comfortable for breathing.  If SWALLOWED: Rinse mouth. Do not induce vomiting.  Seek medical attention if required. |

NON-HAZARDOUS substances

|  |  |  |
| --- | --- | --- |
| **0.1M Silver**  **nitrate (solution)** | Not classified as Hazardous | Wear safety glasses, lab coat, gloves and closed in shoes when handling.  IF IN EYES: rinse immediately with plenty of fresh running water.  IF ON SKIN: Wash off skin with running water and soap. |
| **0.1M Barium nitrate**  **(solution)** | Not classified as Hazardous | Wear safety glasses, lab coat, gloves and closed in shoes when handling.  IF IN EYES: rinse immediately with plenty of fresh running water.  IF ON SKIN: Wash off skin with running water and soap.  IF SWALLOWED: Seek medical advise. |

Other hazards and possible risks

|  |
| --- |
| Any glassware used can break with the potential for cuts. Sweep up broken glass with a brush and dustpan, do not use fingers. Discard to a broken glass bucket. |

Protective measures

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

Disposal of waste and lab technician notes

|  |
| --- |
| The students use two drops of each diluted chemical in this experiment. As such small amounts they may be washed down the sink, followed by water. |

|  |
| --- |
| \*\*\*\*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:**

|  |
| --- |
| **EXPERIMENT 1.8: Colour-blindness inheritance** |

*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 18–21 and 186

**Equipment required**

|  |
| --- |
| Each group requires:  2 counters  Permanent marker |

**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

|  |
| --- |
| Permanent markers may contain solvents, avoid breathing vapour. Replace lid after using. Difficult to remove off clothing and benches.  Counters could be a choking hazard or be thrown. |

Protective measures

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Lab coat | Safety glasses | Gloves | Fume cupboard | Other |
| Yes | Yes | Yes |  | Wear gloves when removing permanent marker off counter, if using methylated spirits. Flammable liquid. Keep away from ignition sources, heat and flames. |
|  | | | | |

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** |
|  |  |  |
|  |  |  |

Disposal of waste and lab technician notes

|  |
| --- |
| Collect counters and either leave labels on them for future classes or remove the permanent marker with a little methylated spirits and a cotton ball. Wear all safety equipment to clean using methylated spirits. |

|  |
| --- |
| \*\*\*\*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 1.13: Edible genetic engineering** |

*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 34–35 and 188

**Equipment required**

|  |
| --- |
| Each class requires:  1 packet of lolly snakes  1 packet of sour worm lollies |

**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

|  |
| --- |
| Do not eat or drink in the science laboratory. |

Protective measures

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

Disposal of waste and lab technician notes

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| --- |
| Lollies to be saved for future classes or discarded to the bin. |

|  |
| --- |
| \*\*\*\*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. |